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ORIGINAL LECTURES.

MASTURBATION.

A Clinical Lecture.

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THIS painful subject is usually involved in such mystery, and spoken of so seldom and so incompletely by medical authorities, that it is by no means easy to determine to what extent it prevails, how to discriminate its victims or how to suggest a remedy. When discovered in a school, or in a family, it strikes everybody with such horror that it is at once concealed and hushed up, instead of being treated, as it always ought to be, as a disease; and the unfortunate children who are discovered in the practice are regarded by their discoverers as having sunk to the lowest moral depths.

It is a sad misfortune that all sexual questions are so completely hidden from children at puberty that they are driven to make discoveries for themselves, often with disastrous results. One of the greatest practical results of the discovery of Mr. Darwin of the descent of man from the animals which have gone before him is that by it the sexual instincts, or, as they are generally and most unfortunately termed, the sexual passions, are shown to be the most necessary, as well as the most prevalent of all the instincts which have been evolved by the necessities of animal existence. We might just as reasonably speak of the respiratory passion or the circulatory passion. Respiration and the circulation of the blood are essential to animal existence. As those with the best breathing, and those with the best blood circulation necessarily have, under certain circumstances, the best chance of survival in the struggle, so do those with the best capacity for procreation serve their purpose in the struggle for the maintenance of the race, of the species, of the great chain of life itself. All the most pronounced organs adapted for struggle are directed toward sexual success. The sexual instinct has thus become everywhere in the scheme of creation the great weapon of evolution. That it should be curbed, properly restrained and judiciously directed is now one of the great objects of civilization—an object to be aided in every good and wholesome way. But I doubt very much if some of the methods employed for this purpose are judicious.

The female organism has always been merely the vehicle for the maturation of the ovum, and for the receptacle of the fertilizing influence of the male; being, in fact, what we may call the passive factor in the reproductive act. For her part of the process, then, offly enough of sexual passion or instinct is required to indicate to the male the stage at which his share may be effectually performed. For the male, on the contrary, a constant tendency to aggression is necessary, that he may be in readiness at the time required.

Further, the struggle for the survival of the fittest has constantly been carried out in its chiefest severity amongst the males of all animals, and only partially amongst the females; so that it has come to be that the physically fittest has necessarily been also the sexually most powerful. This requires no proof, for it is demonstrated by the enormous prices given by breeders of all animals for the best males compared with the prices obtained for the best females. In fact, through countless generations of all animals, the sexual instinct, above all others, has been developed in the males by the constant elimination of the least fit, and the subsequent success of the sexually fittest. Every provision of weapon, offensive or defensive, from the spur of the cock to the tooth of the tiger, has its primary object in enabling its possessor to compete successfully in the sexual struggle. Even in civilized life, the chief desire to possess wealth seems to be to make a good marriage, and the daughters of our race walk off with the most successful (that is, the wealthiest) suitors, much as the tigress walks off with the victorious male. It ought to be, therefore, no matter of surprise that in the human race the sexual instinct is very powerful in man, and comparatively weak in woman.

Another matter must here be also noticed. The females of all animals resist the advances of immature males for the reason that the struggles of the fittest has taught the races that the offspring of such advances are less fit for survival than the offspring of the mature male. Any one who has kept poultry must have noticed how soon cockerels make advances to hens, and how persistently the latter refuse them, and how they punish the cockerels for the attempts until their perfect maturity has been attained. Considering these two great facts in animal life, it is not surprising, then, that masturbation is very common among boys and comparatively rare among girls. Indeed, if we are to believe some authors, and I must say I am inclined so to do, boys always discover the practice for themselves, and very few of them are free from it. I am quite certain, on the other hand, that it is relatively rare amongst girls, and that it is generally the result of direct contamination. Sometimes, however, they discover it, for I have met with two instances of children, almost infants, one being only four years of age and the other six, where it was absolutely impossible that it could have been communicated to them, and in both of whom it was found to be utterly impossible to check it. They were both of defective intellects, a condition which I regarded as the cause of the masturbation rather than, as might be more generally held, that the vice was the cause of the deficiency. I look upon it, in fact, as a reversal of moral type, for no one can ever have watched the habits of monkeys without having discovered that masturbation is almost universal among them in confinement. Whether it may be practised by them in their native woods is not yet known, but I fancy that it is rather the result of their luxurious life, their

freedom from the strain of earning an honest livelihood in the native circumstances of their wild life. Idleness and luxury are always provocative of lust in monkeys as in men.

Between the period of puberty and the time when young members of the human race may legitimately follow out their instinctive tendencies, there are a number of years during which the male glands are active and troublesome, and the males discover a method of relief. No such relief is wanted for the female glands, for they discharge their products without it. But if the rudimentary instinct be once directed into this artificial element, it is often carried to great excess, and there can be no doubt that much mischief is sometimes done to the economy. The most pernicious effects are met with when the contamination reaches a congregation of young women, as in a girls' school. I have been consulted concerning epidemics of this kind, both in boys' and girls' schools, and have always found the chief difficulty to be that of persuading those having charge of the schools that the practice was a physical delinquency rather than a moral evil, and that the best remedy was not to tell the poor children that they were damning their souls, but to tell them that they might seriously hurt their bodies, and to explain to them the nature and purpose of the functions they were abusing. In one instance, the head of a very large girls' school took my advice on this subject, with the best results.

The evil effects of masturbation have been greatly overrated, thanks to a reticence on the part of those who know all about it, and this has permitted a disagreeable subject to fall into the hands of those who live by trading on the ignorance and misfortunes of their fellow-beings. In the case of men, it may, and often does, result in serious mischief, especially to those of weakly constitution. In women, I believe, it is not often carried to such an extreme as to do any harm, though I have met with cases in which serious injury has resulted; and I am quite certain that girls may almost always be induced to give up the practice, when a reasonable explanation is afforded to them of the risks attached to it. I have had under my care a lady, who was educated in a convent in Belgium, where, according to her statement, the practice was prevalent, and where she was initiated into it at fourteen years of age. She voluntarily informed me that she has continued it ever since, though she has married and borne several children. She is now nearly forty years of age, and enjoys robust health.

But there is another class of cases well illustrated by two patients whom I have watched for some years. They are both slightly built, and rather delicate blondes. They were both corrupted at school early in life. In one of them, an immoderate indulgence at a menstrual period brought on an hæmatocele, which has ever since been a source of ill health, and has rendered her married life infertile. In the other, a similar excess soon after marriage induced a miscarriage, a repetition of her indulgence excited an hæmatocele with perimetritis, and to the same cause, I am sorry to say, we are obliged to attribute recurrent inflammatory attacks, which render her a chronic invalid. In neither of these cases has advice been of the slightest use, even though couched in terms of the strongest kind; but I am bound to say that such a disappointing result is very unusual.

The method of practising the vice is usually by the finger, but devices of a still more mischievous character have come under my notice. In young children, masturbation is often associated with defective mental development, and it should always be a ground for placing them under special care. In all establishments where the young of either sex are congregated the system of separated cubicles should be employed; and children ought never to be allowed, under any circumstances whatever, to sleep with servants. In every instance where I have known a number of children to be affected, the contagion has been traced to a servant.

I think it possible that, in some inveterate cases, clitoridectomy might be beneficial, but I have never tried it save in one instance. It is certainly the case, as I have elsewhere said, that the chief point of local excitement in the sexual act is in the clitoris, and a recognition of this fact involves a very strange and most discreditable piece of surgical history.

Some thirty years ago, there lived and flourished in London a surgeon of great ability, Mr. Baker Brown, whose influence in the history of ovariectomy will be displayed in its appropriate place. Mr. Baker Brown was not a very accurate observer, nor a logical reasoner. He found that a number of semi-demented epileptics were habitual masturbators, and that the masturbation was, in women, chiefly effected by excitement of the mucous membrane on and around the clitoris. Jumping over two grave omissions in the syllogism, and putting the cart altogether before the horse, he arrived at the conclusion that removal of the clitoris would stop the pernicious habit, and therefore cure the epilepsy. He operated in an enormous number of cases, for epilepsy is very common, and patients and their guardians will submit to almost anything which promises a hope of relief. There can be no doubt that many cases were temporarily benefited, just as cases of epilepsy are benefited for a while by castration (in the male), removal of the uterine appendages (in women), and trephining (in both sexes). Besides, Mr. Baker Brown's operations had no mortality, and the reduction of the sexual distemper of a number of epileptics, even for a while, or to some extent, was of itself a benefit. But Mr. Brown carried his efforts to a most injudicious extent, due to the fact that he was suffering from very extensive cerebral softening, and really was incapable of forming a sound judgment. His subsequent illness and death proved this, and I have a large amount of documentary evidence in my possession, which some day will see the light, which will place the terrible story of this most unfortunate man in a light altogether different from that in which it has hitherto been regarded.

As a result of the disease from which he suffered, he resisted the advices of his colleagues and the committee of his hospital, and he ran his hobby till he got into trouble with the Commissioners of Lunacy for a technical infringement of the conditions under which lunatics may be detained in places not licensed for their reception. This would have been of little consequence had he not been a successful ovariectomist, and had he not been pursued by a rival as relentless as he was cruel and persevering. The authorities of the Obstetrical Society were induced to take up the matter, and Mr. Baker Brown was expelled from the Society, a large part of the evidence against him being furnished from the common-

place book of a rival who seemed to have been dogging his steps for years.

Calmly regarded now, after the lapse of twenty years, Mr. Baker Brown's ruin is a matter of regret. The voices of his colleagues, who knew the diseased condition of his brain, ought to have had greater weight with his professional judges, and milder measures ought to have been adopted, measures less likely to bring scandal and discredit on the profession to which Mr. Baker Brown was a distinguished ornament. This, I predict, will be the judgment of another generation, when all the actors in the drama are gone from amongst us.

One disastrous result came from the decision of the Obstetrical Society at once, as might have been expected. The operation of clitoridectomy as a means of mitigating a depraved sexual appetite was absolutely discarded, and I have never heard a surgeon say he had performed it since 1867. Yet I am certain that in many cases it would be useful. I have performed it once, in a case where it was suggested by Dr. Thursfield, of Bridgworth, for reasons altogether too disgusting for publication. The following letter from Dr. Thursfield, two years after the operation, completely justifies his suggestion and my carrying it out:

"You will remember I told you, a few months after the operation, that she was dreadfully depressed in spirits and annoyed that she had submitted to it; soon afterward she became better in health and strength, and now, I am glad to say, she is improved morally and physically.

"She is nurse, companion and governess to her sister's children; and when I saw her, a month back, at first I did not recognize her, she was so bright and cheerful in manner and appearance; my opinion of her case is, that the operation has saved her from suicide or the asylum, and I believe she will be, instead of an encumbrance and anxiety to her friends, a comfort and help."

ORIGINAL ARTICLES.

TWO CASES OF GLOSSY SKIN, WITH CAUSALGIA FOLLOWING INJURY OF THE NERVES.

BY THOMAS D. DUNN, M.D.,
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CASE I.—Mrs. H., aged seventy-nine, fell on the 9th of July, 1887, and sustained a fracture of the neck of the left thigh. By great effort, after the accident, she succeeded in dragging herself to the second story and into bed. It was twenty-four hours before I was summoned. During that period she suffered intense pain, but thought the injury nothing more than a sprain which would soon improve with rest. There was considerable swelling around the hip-joint, and about two inches of shortening. The reduction of the fracture was easy and afforded the patient immediate relief. The dressing consisted of the ordinary extension by a weight attached to adhesive straps applied to either side of the leg below the knee and held by a roller bandage; counter-extension by elevating the foot of the bed, and lateral support by a short sand-bag to the inner side of the

leg and thigh, and a long one extending from the foot to the axilla.

For a few days the limb was comfortable, but the patient suffered greatly from her back, and fearing bedsores might complicate matters, the Nathan R. Smith apparatus was substituted to enable her, by swinging the limb, to move about the bed. This induced so much suffering of the foot and thigh that the former dressing was re-applied.

About four weeks after the injury she began to complain of pain below the knee, which was greatest over the dorsum of the foot. This gradually became worse, and in two weeks was so severe that the extension apparatus was removed. She described it as a horrible, burning pain, never entirely ceasing during waking hours. It was as severe at night as during the day, and for weeks she secured very little sleep. There were occasional remissions of pain but never complete ease. Hyperæsthesia was as intense as the pain—the slightest touch causing increased suffering and twitching of the muscles. This supersensitiveness extended from the knee to the tips of the toes, but was greatest along the spine of the tibia and over the dorsum of the foot. There were also almost constant muscular movements of the foot, which were greatest at the periods of greatest suffering. She could not bear the weight of a sheet. The extensors of the foot were in a state of tonic spasm, causing a more or less pointed toe. Pressure over the sciatic nerve between the tuberosity of the ischium and great trochanter aggravated both pain and muscular twitching.

About six weeks from the date of injury a peculiar glossy condition of the skin appeared. It looked as though it had been polished or varnished and was destitute of hairs. In appearance it was mottled in patches, the color varying from natural to purple and mahogany-red. The epithelium was in places partially lost, leaving the cutis exposed. There were no wrinkles. The surface was so smooth and shiny that the reflection of bodies held near it was distinctly seen. Several crops of vesicular eczema appeared in patches during the intensity of the disease, which were attended by slight amelioration of the pain. Both the pain and hyperæsthesia reached their height during the fifth week, and then gradually lessened, but did not entirely disappear for three or four months.

After the climax of the disease was reached the vesicular eruption ceased, but the glossy skin remained for nearly four months undiminished, and at the present time, ten months after the injury, has not completely disappeared. There was from the first some swelling of the ankle, which has not entirely subsided.

An interesting feature of this case, showing the disturbance of nutrition, is the arrest of the growth of the nails of the left foot for almost ten months.

The suffering in this case was the most unmanageable that I have met. No local application, except fomentations of hot water, afforded the slightest relief, and they very little. Ointments of morphia, atropia, aconitia and lead, many anodyne liniments and fomentations were tried and abandoned as valueless in controlling the horrible pain. Counter-irritation over the inflamed joint was resorted to without perceptible benefit. The patient was opposed to the internal use of anodynes, and bore her suffering with the greatest fortitude for weeks. This peculiar condition of the skin is explained by a local neuritis of the sciatic nerve near the injured joint.

CASE II.—J. B., colored, male, aged fifty-six, was injured in the explosion at the West Chester Electric Light Works, December 14, 1887. His injuries consisted of several lacerated and contused wounds of the scalp, face and legs. These were inflicted by bricks from the falling smoke-stack, and were filled with mortar. There were also several superficial burns from hot brick. After thorough cleansing and dressing with iodol and carbolized gauze, the wounds healed without delay, except one on the outer side of the right leg, an inch below the head of the fibula, which remained tender, and was a week later in healing than the others.

About two weeks after this wound closed, the man began to complain of a burning pain in the outer side and front of the leg, extending over the back of the foot and toes. The greatest suffering was at the bend of the ankle, where bullæ formed. They contained bloody serum, and left ulcerated surfaces which soon healed, to be followed by other vesicular patches. The skin over this region was thin, shiny, very smooth, free from hairs, and mottled, varying in hue from a light to a dark brown. It was very sensitive to the touch, and local applications afforded no perceptible relief. Anodynes were administered to secure rest, but with imperfect results. As soon as these patches began to discharge their bloody serum the pain diminished. By March 1st the pain had partially subsided, but the eczematous crops still recurred. April 1st the pain and eruption had disappeared, but the skin had lost none of its glossiness. There was some swelling of the part, but none of the muscular twitching that formed so distressing a feature of the former case.

The disease was limited to the distribution of the peroneal nerve, and was doubtless due to a neuritis—the result of the injury previously described. In the former case the sciatic nerve was injured by the broken femur, which must have been greatly displaced by the patient's effort in going up-stairs. Injury to a great nerve in fracture of the thigh is rare. Dr. Mitchell says (*Injuries of Nerves*): "As regards the femur, lesions grave enough to break and displace fragments from one end of the bone so as to injure a great nerve are rarely seen except as the result of

machine or railway injuries. He relates a case of double fracture of the neck of the femur, reported by Mr. Swan. The patient survived two months. 'There was intense pain which proved to have been due to direct injury to the sciatic nerve by the broken bone.'"

Drs. Morehead, Mitchell and Keen, in the *Report of the United States Hospital for Nervous Diseases*, give an excellent description of glossy skin. Previous to this report, Sir James Paget distinctly described this peculiar condition of the skin, and it had been noted as early as 1810 by Mr. Alex. Denmark. An exhaustive description of the malady may be found in Dr. Mitchell's *Injuries of Nerves*.

DIETETIC MANAGEMENT OF THE SUMMER DIARRHŒA OF INFANTS.¹

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IT was with much pleasure that I accepted the flattering invitation of your Chairman to be present and participate in the discussion of the very interesting question of this evening, though I confess I feel some trepidation when I contemplate the task I undertake, for I fear what I shall say may not coincide with the opinions held by many of my hearers, and yet, having undertaken to give my views, I cannot, in honesty, avoid what seems to me perhaps the most important of all questions connected with the subject—the use of milk. For only by free discussion, with the outspoken expression of conflicting opinions to sift the various views and rouse interest in the subject, can the real truth be reached. The question is one to which I have given a good deal of attention, both from its practical and its theoretical aspect, having had for a number of years a large experience in the treatment of the disease amongst the poorer classes, while connected with the out-door department of the Children's Hospital of Philadelphia, beside attending a fair number of cases in private practice, and for two or three years I bestowed a large share of my leisure time upon a study of the chemical analysis of human and cow's milk. According to my understanding of my subject, it was not intended that I should confine myself to a discussion of the dietetic management of acute cholera infantum alone, but should include that of all cases of the summer diarrhœa of infants.

Perhaps I can best make plain what I wish to say by first describing what I consider proper dietetic management of the complaint, and then giving, as briefly as may be, the reasons.

When called upon to treat a case of any form of

¹ Read before the New York Academy of Medicine, Section on Pædiatrics, June 27, 1888.

summer diarrhœa, the first question to be asked is—What food has the infant been taking? If it has been nursed, we should be very careful in making any radical change, and should only do so if there is positive ground for believing that the attack is the result of some fault in the milk and not of the hygienic or atmospheric surroundings, other than those connected with the food. As yet, I am quite unable to bring myself to believe that, even in cases of acute cholera infantum, it is good practice to take away from the infant the milk of its mother, if she is a healthy woman and the child has previously thriven upon it. Therefore, as routine practice, and when there is no direct reason to suspect the milk of the nurse, I should continue to have the child suckled for its main nourishment.

As adjuvants, and very important ones, the use of water and stimulants, and perhaps some supplementary food, may be necessary. The administration of water is very useful, for often the child frets to be nursed frequently because it is thirsty, and thereby gets too much food and overtakes its already greatly irritated stomach; whereas, if water is given, the system obtains what it really needs and nothing more; its systematic administration, therefore, should always be directed in cases of choleraic diarrhœa. In speaking of the use of stimulants, it may be thought that I am departing somewhat from my subject and trespassing upon the ground of the therapeutic management of the disease, but to me it has always seemed that stimulation in these cases is more nearly allied to dietetics than therapeutics. Such being my view, it may, perhaps, be permitted to me to say that I look upon stimulation as of the utmost importance in the severe forms of diarrhœa, and that it is well in such cases to give a teaspoonful of good brandy or whiskey in a tumblerful of water, three or four times a day (a young baby cannot often be induced to take more than this quantity in twenty-four hours, nor would it be well, except in cases of very unusual severity, to give more), or to give thirty drops in sweetened water every two hours, as may be judged best, according to the stage of the disease or indications in the individual case dealt with. In regard to the administration of other food beside that of the milk of the mother, it must first, as already said, be determined whether there is reason or not to believe that the latter is in any way faulty. If the milk of the mother is decided to be faulty, and has, therefore, been partly or wholly the cause of the attack, the nursing must at once be stopped and the infant fed artificially in the way that will presently be described under the head of the ordinary dietetic treatment of the disease for hand-fed infants. On the other hand, even when the mother's milk is, for every reason, believed to be good and to have been in no way the cause of the illness, it will often be found of advantage to give two or three

times a day half an ounce of raw beef juice with a pinch of salt in it; or, again, wine whey will often be retained by an irritable stomach, and one or two ounces given two or three times a day will be found to aid in the cure.

The dietetic treatment of summer diarrhœa in hand-fed children, and in those who, having been nursed, must suddenly be weaned, because it has been decided that the mother's milk was so bad as to be no longer a fit nutriment for them, is a subject of both great importance and difficulty. If the case is one of an infant previously hand-fed, the first thing to be determined is whether the food has been in any way the cause of the attack. The sources of supply and the condition of the food, as it is found in the bottle from which the infant takes it, must be carefully investigated.

The basis of almost all foods for infants is cow's milk, and the question of their artificial feeding, both in health and disease, therefore, largely hinges upon its composition and methods of use, unless we are prepared finally to accept the new views upon the subject, which are the result of studies of the chemistry of, and the microorganisms found in milk; in which case, if we push our belief to its furthest limit, the question of the dietetic treatment of summer diarrhœa becomes a very easy one to solve, for we have only to decide upon the form of meat broth which shall be administered. As I am unable to accept the view that the best treatment in all cases of summer diarrhœa, or even of the choleraic forms, is at once to stop all milk-foods, and put the infant upon an exclusive diet of meat-broth, it becomes necessary to say something of the use of milk.

The great and cardinal principle to be remembered under all circumstances, in using cow's milk for infants, is, that it contains a much larger percentage, about three times as much, casein as does human milk, and that it must, therefore, always be diluted. The word casein is used advisedly, for it is an old term and quite as good a one by which to express the various nitrogenized principles contained in milk as any one of the newer names. Where cow's milk is diluted the amount of fatty material is reduced to less than that contained in human milk, and, therefore, something must be done to increase the quantity of this constituent, which is easily effected by the use of cream. The sugar in undiluted cow's milk even is less in amount than that in human; sugar, therefore, must be added. Lastly, and a matter of great importance, cow's milk is acid, while human milk is alkaline, and this difference should be removed. The addition of lime water is the best known means of effecting this end.

This is not the proper place, and the time is insufficient, for me now to go deeply into the arguments in regard to this subject, more especially as I have already done so in my work upon *Milk Analy-*

sis and Infant Feeding, and, therefore, it is only possible for me to give somewhat dogmatically, and without expressing the reasons, my conclusions upon what constitutes good dietetic treatment of the disease. It has been my habit in cases of diarrhoea, as well as for infants in health, to depend upon milk-foods mainly (it goes without saying, that in all instances the milk must be absolutely untainted when given to the child). The food I have recommended, and from the use of which I have had very satisfactory results, was the outcome of a study of the subject, both from the clinical and the scientific or theoretical standpoints. Clinical experience taught me that dilution, with the addition of cream, sugar and lime-water, gave good results, and when by chemical analysis I learned that such a mixture contained the same constituents as, and in almost the exact proportions in which they exist in human milk, I became entirely convinced, and the more I have pursued the subject the more satisfied have I become.

Since writing my book, I have further studied the subject, and have come upon the following method for the preparation of the food, which is easier and, therefore, better than that formerly recommended. One quart of milk is placed in a vessel, a tall narrow pitcher is best, and after standing for three hours the upper pint is slowly poured off. This contains the greater part of the fat (cream), and when the child is to be fed there should be mixed together three ounces of this cream, two ounces of lime water, and three ounces of sugar water, which must be made in the proportion of eighteen drachms of milk sugar to a pint of water. This makes eight ounces of food, which, of course, is much too large an amount for a young infant or one that is ill. If, therefore, the infant is young, only two to four ounces will be needed at each feeding, and only that quantity should be prepared, the same proportions, however, being observed and the measure used a tablespoon or dessertspoon, as the case may be. The directions given are those for the feeding of a healthy infant between two weeks and six to nine months of age, and are mentioned only to serve as a basis for what should be given those suffering with summer diarrhoea.

In infants in health, it is very important that we should take a lesson from nature, and not increase the strength of food until the child is six months to a year old; and in cases of summer diarrhoea, or if there is any threatening of it, this, I am sure, is absolutely essential, as young infants can seldom when well, and still more rarely when suffering with diarrhoea, digest without injury the large quantity of casein contained in undiluted or very slightly diluted cow's milk. The food described, therefore, serves as the basis upon which I rest my method for the dietetic treatment of the disease, and with it as

a base I vary the food in many different ways to meet the needs of different cases.

Of the four things mentioned as necessary to make cow's milk a fit food for infants—to dilute, and add cream, sugar and lime-water, the least essential probably is the use of milk sugar. In cases of diarrhoea, it occasionally becomes advisable to use cane sugar, and if this is done one-third less should be used than the amount recommended of milk sugar. An excellent food for children of six months old or more, and one which has been largely and very successfully used at the Children's Hospital in cases of summer complaint, is that which was recommended by the late Dr. J. Forsyth Meigs: equal parts of milk, cream, lime water and arrowroot water (the last to be made of a teaspoonful of arrowroot flour to one pint of water), and a small quantity of cane sugar; the amount of this to be given and the frequency of the feedings to be such as the individual case requires. The addition of some starchy material or dextrin is of great advantage in many cases, whatever may be the mode of its action, whether mechanical in separating the particles of the milk, or local upon the mucous surface of the bowel, or if its absorption and assimilation has a beneficial effect. One of the best is arrowroot, and the old flour ball, made by boiling common wheat flour in a bag for many hours until it becomes hard, and then grating it, is excellent. Barley, prepared as has been recommended by Dr. Jacobi, may be found exceedingly useful. Of all the baby foods that are manufactured, the only one that has given me such results as to encourage me to persevere in its use for any great length of time and to recommend it extensively is Mellin's Food. This has in many cases proved most useful, and should be given in the proportion of a teaspoonful to four ounces of whatever milk food is being used. It has never seemed to me necessary to dissolve it separately in hot water, and I have generally had it added directly to the milk when warm, for it is readily soluble.

In some cases, excellent results will be attained by taking away all forms of milk and administering animal broths alone; but in my experience this has been the exception rather than the rule, though it is one of the expedients which should always be tried in severe cases which prove unmanageable by the ordinary methods. In my own cases, I have very commonly found that children would soon refuse their food if given soups alone, and it is almost as difficult to make a rebellious infant take what it does not want as an adult; again, many infants will vomit the soups as soon as they are given, when, on the other hand, they will take and retain some form of milk food.

It is very important, in treating this disease, that

precise directions be given with regard to how often the infant shall be fed and the quantity to be taken each time. For my own part, I believe the best results will be attained by not making much change in regard to the frequency of feeding in mild cases—that is, a young infant should be fed every two or three hours, a child of six months old five to eight times in each twenty-four hours, and older infants about four to six times daily. In severe cases, however, it is different, and the frequency of the feedings and the quantities must be quite different from what was proper in health. Experience has brought me to the conclusion that it is only in rare and exceptional cases, and then only for short periods (twenty-four or forty-eight hours at the outside), that it is either desirable or useful to administer food oftener than every two hours. The more frequent taking of food than this would seem likely to keep the digestive organs perpetually at work, or even to give them a fresh load before they have had time to dispose of the last taken. My rule, therefore, is, in severe cases, to give a small quantity of food (from half an ounce to three ounces, as it is found the stomach can retain), every two hours. If the case is very critical and collapse or some other form of sudden termination seems so imminent that something must be done, stimulants, which act quickly, will be much more to the purpose than food; as common practice, therefore, it has long seemed to me that more harm is done than good if food is given as often as every hour, or, as I have frequently seen done, every half hour.

In dealing with cases of summer diarrhœa, one of the most difficult things to avoid is the inclination, when some improvement does not show itself very soon after a change of food has been made, to change again before there has been time to ascertain what was the result. Thus, often greatly to the injury of the patient, a second change is made, and to some food not so suitable as the one just stopped, when, if the physician had waited a few hours longer, he would have found that he held the key to the situation. This difficulty is much increased by the fact that parents and nurses are almost always, and naturally so, very impatient, and, if left to themselves, wish to try everything, and then go so fast from one food to another that the possible benefit is lost. In this particular, more than any other, will a ripe experience, coupled with sound judgment on the part of the physician, stand the patient in better stead under these critical circumstances than great learning.

From what has been said, it might be supposed, perhaps, that I had never heard of the immense work that has been done in the study of the microorganisms which exist in milk, and was ignorant of the great discovery recently made of the chemical poison which is found under certain circumstances, and which has been isolated so that it can be seen and

handled, thus furnishing us a reasonable explanation of what was so long incomprehensible, the fact that milk and articles of food compounded with it become, now and then, quite virulently poisonous. I should be exceedingly sorry to be thought so culpably ignorant, and it was certainly not want of knowledge that made me speak as I have done. The existence of the chemical poison in milk has been demonstrated, and no reasonable man should pretend to doubt it, and the presence of the microorganisms is equally undeniable—it is, however, when we come to reason from these truths that we should proceed slowly and cautiously, and not in any instance commit the error of mistaking our theories or perhaps our conclusions for facts.

Though all that has been claimed in regard to the interdependence of these two facts and the sequence of events from cause to effect may be as has been said, to me it seems that the time is not yet ripe for its unqualified acceptance, as there are so very many reasons, both from the teachings of clinical experience and from the clinical difficulties to be overcome, as well as that many excellent theoretical objections occur, seeming to point strongly the other way. An argument which appears to be a very strong one, against the acceptance of the view that *all* cases of acute cholera infantum are due to microorganisms or a chemical poison or both, is that the disease does sometimes attack infants nursed by a healthy woman whose milk there is not the slightest reason to suspect of being diseased and in which the existence of neither microorganisms nor chemical poison has been demonstrated. Now, as it is beyond doubt that such cases do occur, does not the burthen of proof rest with those who make the assertion of the cause?

As practitioners, what we have to do is to meet the responsibilities and the exigencies of the various cases as they come to us, and I think that it would be no advance in our dietetic treatment that we should put all children suffering with summer diarrhœa upon an exclusively animal diet, and that, even in cases of acute cholera infantum, the accumulation of clinical evidence is as yet insufficient to make such a course proper, as a matter of ordinary practice. The use of an exclusively animal diet is by no means a new method of treatment; on the contrary, it is very old, and has been most extensively tried, and it has long been well known that certain cases, that other methods had failed to cure, would yield to it; but it is equally well known that in others, in which it was as thoroughly tried, it failed, and the cure was only effected after a return to milk diet. Now these experiments were made by men with unbiassed minds; they had no theory to uphold or pull down, and they judged the effects by the clinical results obtained, alone. And what conclusion did they reach? That in exceptional cases only the plan

succeeded, but that in the great majority of instances it failed, miserably, and they had to return to milk as their sheet-anchor.

If we drive this theory of the microorganisms being the sole cause of acute cholera infantum to its ultimate issue, in no case would a patient ever recover if the use of milk was continued, for are we not told that they continue to live and thrive in the intestines of the child? And supposing that no therapeutic remedy was administered to effect their destruction, they should grow and increase so long as supplied with the material—milk—necessary to their existence. No one would pretend to deny that many infants recover from cholera infantum upon the old diet of milk. The advocates of the theory are obliged to assume that, owing to some unexplained reason, the soil ceases to be fertile, or that under some conditions the microorganisms, which a day or two ago were active and threatened the life of the infant, have become quiescent and harmless.

For the sake of argument, let me try to put myself in the place of those who are fully convinced that cholera infantum is always due to the action of microorganisms upon milk, and that the further administration of that article of food will necessarily be very injurious to any patient suffering with the disease. I must then, of course, give only animal food; but at the very outset, the doubts and difficulties that beset me in the clinical management of my cases are enormous.

Any one who has tried to feed a diabetic upon an exclusively flesh diet knows that it is always difficult, often impossible, and with infants it is the same; many will refuse to take the broths, others will vomit them with the utmost violence as soon as swallowed; and my past experience tells me positively that some of these same infants can take and retain milk food. Now what is to be done, give the milk or hold rigidly to the routine of meat diet alone? Again, one of the most difficult points we shall be called upon to decide is: What constitutes cholera infantum, and how are we to recognize clinically the difference in cases which approach the border-line between it, at the one extreme, and simple diarrhœa with which almost all teething children suffer more or less in summer, at the other? The decision of this question will often be very difficult, and vastly important, especially in the case of nursed infants, who, if the breast is taken from them, even for a few days, often, for a variety of reasons, cannot be got back to it. Neither chemistry nor bacteriology will afford any aid in a conclusion in any individual case, the clinician being obliged to decide the point on the instant, for his patient would be dead long before the methods of the scientist would enable him to give any answer with regard to the wholesomeness of the food.

Continuing the assumption that it has been proved

that microorganisms are the sole cause of cholera infantum, and conceding that all patients suffering with it must be put upon animal diet, it seems to me that we are still very far from the goal where we may sit down and say, now we have reached the end and no change from our present perfected methods need be made in the future. Is it not universally recognized that for hand-fed infants in health there is nothing so easy of digestion and of assimilation as a good milk food, and no plan of diet so successful as a well-arranged and a well-executed one of milk? It seems strange that so soon as an infant becomes ill, and still more as the disease is one of the digestive system, that we must take from it that which every one agrees is the most digestible and perfect food it can have. Certainly the science of therapeutics is lamentably imperfect, and we must never rest until a medicine is found which will so change the digestive processes or modify the milk that the microorganisms shall cease to be able to work injury, and we may again with safety give to infants suffering with this disease that of which they are sorely in need, the food which of all those in the world suits them best.

In conclusion, I can only say that I hope I have not by an expression contrary to the opinions or beliefs, or even prejudices of my hearers, offended any one, for my wish has been to give, with as great brevity as comprehensibility would allow, my opinion as to what constitutes the proper dietetic treatment of the disease, and then such reasons as struck me as most forcible in favor of the correctness of my opinion and as opposed to the contrary view, which seems to have many advocates in the profession, for I am fully convinced that there has as yet been no accumulation of clinical evidence sufficient to warrant the acceptance of the all-meat diet, and it will be the clinical results obtained which must some day give the question its final answer. Further, I do think that even if we were forced to confess that the meat diet must be accepted as a routine treatment, it must be with the understanding that it is only a makeshift, and that we must strain every nerve to discover some means by which we may again with safety continue our patients with cholera infantum upon a diet of milk.

A CLINICAL STUDY OF THE ETIOLOGY AND TREATMENT OF SUMMER DIARRHŒA OF INFANTS.

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THE season when this fearful scourge enters upon its annual mission of destroying health and life is upon us, and it is meet that we discuss again, though it be for the thousandth time, this all-important subject.

There was a time when I actually dreaded the approach of summer. So fatal was this disease, that it was my wont in the beginning of the season to pass mentally in review the innocents who in the community in which I then resided were ready for the slaughter by reason of their ages and the method of feeding applied to them.

I had been taught to regard this disease as an inflammation of the gastro-intestinal tract, chiefly as an enterocolitis, which required minute doses of mercury, with opium and poultices, and astringents in the later stages.

The results of this treatment may be gathered from the following extract from my record book, written August 21, 1869:

"Four cases of this disease have proved fatal in my hands this summer, despite of all efforts; besides one I saw in consultation, and several other fatal cases were communicated to me by colleagues. When I reflect upon the inefficiency of treatment in these cases, and by what strenuous efforts and most anxious care those which survived were saved, I am bound to feel that there must be something erroneous in my conception of the pathology of the disease."

As long as I regarded summer diarrhœa as a purely inflammatory disease, the treatment continued unsatisfactory; the mild cases recovered and the more severe succumbed. The prognosis has, however, become more favorable since the faulty character of this theory became apparent, and since the adoption of less active medicinal treatment and more careful attention to the removal of irritating matters; together with a due regard to food and other hygienic essentials.

It is my belief now, that the summer diarrhœa of infants is chiefly, though not solely, due to the indigestion and multiplication of microorganisms which create in the gastro-intestinal tract conditions somewhat similar to those found in wounds to which septic material has had access. As in the latter, we observe heat, redness and swelling, signifying inflammation, with all its concomitants and sequelæ, modified by the position and functions of the parts involved; so have we in the former, inflammations whose disturbing influence is exerted upon the organs involved, and which give rise to the manifestations of so-called enterocolitis.

Certain it is that the theories hitherto prevailing with regard to the etiology of this disease are faulty. They have served to lead us into faulty methods of treatment. Both these propositions I shall aim to demonstrate.

The causes of summer diarrhœa are usually enumerated as follows:

1. Insanitary conditions, such as overcrowding, poverty and filth.
2. Artificial feeding.

3. High atmospheric temperature.

In the light of recent studies on this subject, we cannot accept these causes as playing more than the rôle of predisposing elements favoring the development of bacteria, which are the true potential causes of summer diarrhœa.

1st. That insanitary conditions, poverty, overcrowding and filth are entitled only to the claim of predisposing elements, is made evident by the fact that summer diarrhœa is not a disease confined to crowded cities, nor to those localities in cities where large masses of population are huddled together, nor is it limited to the poorer classes, the lower strata of society. Not unlike traumatic fever, it prevails in all localities, wherever the elements favoring its development are in operation. I am aware that this view is not generally accepted, but my personal experience sustains it, for I have observed the ravages of the disease in the dwellings of a rural town, in the isolated log cabins of the plantation negro, where the pure breezes pass freely through large crevices; I have seen it as fatal in the piney woods of South Carolina as in the better dwellings of this great city. Indeed, I may say that my observations on summer diarrhœas have been almost entirely made in the localities and among the people referred to. Although I have treated a few cases in the tenement-house districts of this city, my principal experience has been gathered at Washington Heights, the section which lies north of One Hundred and Forty-fifth Street, between the Hudson and Harlem rivers. Several cases and one death were observed in that lovely suburban group of dwellings called Audubon Park. A more clean, airy and healthful spot cannot be found in this city, and yet, right here, I have encountered cases as severe as in the dwellings of the Germans and Irish in the district beyond it, or in the negro cabins of the South. And, again, I have spent three summers at one of the most popular summer resorts, and here this grim spectre stalked abroad, defying the pure ozone wafted across a broad expanse of ocean.

These observations have demonstrated conclusively that while filth, overcrowding and poverty do increase and enhance the fatality of summer diarrhœa, they do so precisely for the same reasons which would operate in any other septic disease. Overcrowding, poverty, filth and insanitary conditions enhance the fertility of the soil and favor the multiplication of microorganisms which are introduced with the food into the gastro-intestinal tract.

2d. Artificial feeding. That this is a predominating factor in the production of summer diarrhœa has long been accepted by the profession. The fact that the disease is comparatively rare among breast-fed infants established artificial feeding as a prominent predisposing cause. Meinert, of Dresden (*Jahrbuch der K. Krankheiten*, 1884), shows in

his careful statistics that, out of 500 cases of summer diarrhoea, only 4 per cent. were among breast-fed children. Hope informs us that, among 1000 deaths from summer diarrhoea of infants, only 30 were among purely breast-fed infants.

It has long been sought to account for this immense difference by the difference in composition of the milk derived from the human mamma and that obtained from the cow, which is the most universal substitute for the former. But heterodox as it may seem, I am inclined to the belief, which has almost crystallized into a conviction, that this is an error which has been a veritable *ignis fatuus* in the study of this subject. The chemical composition of cow's milk has been investigated again and again, and authors have presented us with tables, each varying from the other, showing the various elements of difference existing between it and human milk. One writer has handed down to the next the same suggestions, viz., so to change by various methods of preparation, dilution, saccharification and even predigestion of the artificial food, as to approximate it most nearly to the natural food. Has the result been adequate to the labor bestowed upon the subject? Are we more successful to-day in preventing summer diarrhoea than formerly? I doubt it. We still find to-day a serious and fatal form of diarrhoea prevailing during the summer months, which we do not encounter during the spring and winter months. *And yet the system of feeding is precisely the same at all seasons.* Infants take cow's milk with impunity throughout the winter months and thrive admirably; indeed, some of the most robust infants have been thus nourished. But when the blighting temperature of summer comes, the scene changes at once, diarrhoea ensues, the baby languishes, and, perhaps after some exceptionally hot day, we are summoned in haste to see it, beyond hope of recovery, or in the inception of an attack which may terminate in a chronic entero-colitis that will sap the constitution and change the robust infant into a mere shadow of its former self. Have we not all passed through this experience? The tolerance of the infant stomach during the winter months is remarkable, and yet this fact has not received the attention it deserves. No complaint is made of the food, unless an attack of indigestion, probably due to overfeeding, occurs, which soon subsides if the food is changed or withheld. No anxiety occurs if such an attack ensues *during the winter months*, but let even the premonitory symptoms of diarrhoea show themselves during the summer months in an artificially fed infant, how different is the experienced physician's prognosis! At once he sees danger ahead, and preparations are made for battling with an enemy, who has so often defeated him that he has learned to dread his first appearance. Why this difference? It cannot, it does not, rest upon the difference in the chemical

constituents of cow's milk. Indeed, the valuable researches of Escherich (*Jahrbuch für Kinder Kr.*, Oct. 1887) have shown, what we all have learned by observation (during the winter), that the great hue and cry about the inappropriateness of casein from cow's milk to infantile nutrition has no foundation. Escherich has fed a healthy infant, ten weeks old, on pure cow's milk, one quart per diem, thus giving the stomach a far larger quantity of casein to dispose of than a nursing of the same age would obtain from the breast, with the result, that he found upon careful examination of the feces an almost ideal digestion of the casein. He was so astounded by the outcome of this experiment that he did not venture to publish it, until he learned that Uffelmann and Forster had reached the same conclusions. He thus was led to the emphatic declaration that "there is no doubt that healthy nurslings are capable of utilizing in the most complete manner cow casein in quantities far in excess of their requirements of nitrogen." Examinations of the feces have established this fact as positive in his mind. If albuminoid bodies approximating casein are found in excess in infants nourished with cow's milk, this is the result of habitual overfeeding, rather than an inability of the gastro-intestinal canal to appropriate the cow casein. "After these investigations," says Escherich, "let not another word be said of the digestion of cow's milk being more difficult in the normally developed infant than the digestion of breast milk."

While I would not be willing to go as far as Escherich, I cannot escape the conclusion, that clinical observations, sustained by the chemical investigations here referred to, point to the fact that practically cow's milk is not so illy adapted to the nutrition of infants as has been generally accepted. Hence the reason of its being so potent a factor (either when taken alone or in connection with other so-called foods) in the production and maintenance of summer diarrhoea must be sought in another direction.

3d. High atmospheric temperature doubtless exercises an important influence in the production of summer diarrhoea. Indeed, the name would indicate that this factor is of paramount import. As I have said above, a diarrhoea occurring in a bottle-fed infant, in a temperature of 40° F., is regarded by us with equanimity, while the same disturbance in a temperature of 95° F. at once creates anxiety. In what manner does the elevation of temperature so completely change the prognosis? It has been generally held that the depressing effect of high temperatures upon the sensitive organization of infants, together "with the noxious exhalation from various sources with which the atmosphere is loaded, as a consequence of the heat" (J. L. Smith), explains this difference. But here, too, as in the matter of artificial feeding, we have

probably been searching in the wrong direction. For, while there is no doubt that the depressing effect and the noxious exhalations due to high temperatures are *predisposing* elements, the fact stares us in the face, that nurslings who are as much exposed to these influences as bottle-fed children enjoy so remarkable an immunity from the disease, as Hope, Meinert and others have mathematically demonstrated. True, it may be held that, being more healthfully nourished, they may be fortified against these noxious agencies arising from heat; but if this were the correct interpretation, the difference would not be so immense as 4 to 96 (Meinert) and 3 to 97 (Hope). We cannot, therefore, accept this explanation of the action of high temperature in the production of summer diarrhœa.

Clinical observation has demonstrated that the three factors referred to, viz., *insanitary surroundings, artificial feeding and excessive heat act in unison in the production of summer diarrhœa*. But, while this is true, their *modus operandi* has, up to the present time, been misunderstood. I am almost convinced that the *kind* of food, if it be reasonably constructed with due regard to the physiological functions of the infantile digestive tract, would be of minor importance *if we could prevent the access of microorganisms in its preparation*.

The reason why cow's milk prepared in the old-fashioned way, by dilution, warming and sweetening, does not produce serious diarrhœa in winter, while it almost invariably does so in summer, lies not so much in its large amount of casein and fat, and smaller amount of sugar, etc.; but more in the fact that a *high atmospheric temperature favors the development and multiplication of bacteria*.

It is a matter of common observation that milk turns sour more readily in warm weather than in cold. Soxhlet has shown this difference in mathematical degrees, viz.; that milk curdles 330 times faster in a temperature of 95° F. than at 58° F. Here we have the whole matter in a nutshell.

It was first shown by Pasteur, as long ago as 1857, that the curdling of milk is due to a bacterium lactis; and since that time Schröder, v. Dusch, Lister, Hueppe, Marpmann, Löffler and others have labored effectively to clear up the subject of milk bacteria. It has been demonstrated that milk sugar is transformed into lactic acid by the bacterium lactis, with development of CO₂, and that not all milk fermentation is due to a single organism.

But the most important discovery in connection with this subject was made by Lister, who, in following up the original researches of Pasteur, ascertained that a drop of sour milk, introduced into urine or into any appropriate culture fluid, gave rise to a remarkable development of bacteria of various kinds and degrees of mobility, and that a drop containing any of the latter would again produce souring of milk.

It requires no great stretch of deduction to believe that, when the various bacteria rapidly developed in warm weather in cow's milk after it leaves the udder reach the stomach of an infant depressed by excessive heat and perhaps by insanitary surroundings, their number may be rapidly multiplied; fermentation may thus be set up with evolution of gases, which in turn fructifies the soil for their increased development. The proper breaking up of casein is interfered with and it passes into the intestinal canal, carrying with it masses of bacteria, which, joining those present in the canal, become the parents of such large colonies of various types, that the intestinal tract becomes inflamed and ptomaines are formed, thus giving rise to the local lesions and general phenomena of summer diarrhœa.

That this is not a theory unsupported by demonstration is shown by the investigations of Baginsky, Nothnagel, Booker, Escherich, Hayem, Lesage, Le Gendre and others. In his work (*Die Verdauungs-krankheiten der Kinder*, published in 1884), Baginsky refers to his microscopic examinations of the intestinal walls in follicular diarrhœa and cholera infantum, with a view to ascertain if the pathological lesions are coincident with the appearance of microorganisms in the intestinal canal and if this connection is of etiological significance. After carefully eliminating, by processes which he describes, all "cadaveric microorganisms," he succeeded in separating four different varieties, which he describes clearly and which, he is sure, are not post-mortem developments. He says that some of these so closely resemble those found in the stools that the conviction cannot be avoided that they are the same. The abundance of these microorganisms in the feces of the initial catarrh and their reappearance in the intestinal walls in cholera infantum lead him to the view that *they are essential factors in the production of these diseases*.

Booker has studied twenty-three varieties of microorganisms in the different forms of summer diarrhœa in children. The authors mentioned above have entered fully into this subject; but the aim of this paper being purely clinical, I must be content with a simple reference to their work.

These preliminary remarks on the probable causes of summer diarrhœa are necessarily brief, being intended simply as a prelude to the description of treatment. It would follow, from what has been said, that by the light of modern investigation we may recognize the erroneousness of our former management of these cases, and also the reason why such remedies as evacuants, mercurials, bismuth, creasote, etc., have afforded good results in many cases, while the opium treatment, which aimed to cure by quieting the peristaltic action, failed to accomplish any permanent result.

The treatment may be divided into prophylactic, curative and symptomatic. In the prophylaxis of

summer diarrhoea—the selection and preparation of the food stand first and foremost.

How can we select an infant food that will fulfil the chief indications of preventing the access of bacteria to the stomach?

We know that human milk is aseptic, hence it rarely produces fermentation and consequent diarrhoea, and I believe *this is its chief claim* to being the foremost food in the prophylaxis of summer diarrhoea. We know, also, that the best substitute for human milk is some preparation of cow's milk, and this is also aseptic when it leaves the udder. Human milk reaches the infant's stomach directly without admixture, while cow's milk reaches it after exposure to various contaminating influences. In the first place the act of milking alone must favor the production of bacteria. I speak from personal observations (having owned a herd of Alderneys) when I say that it is utterly impossible, by the means hitherto in vogue, to avoid contamination. The stable may be ever so neat, the hands of the milker scrupulously clean, the teats carefully washed; but the act of milking involves a kind of churning of the milk deposited in the bucket by the stream propelled into it from the teats. This churning produces a large quantity of foam whose chief constituent is air containing the impurities which the most punctilious attention to cleanliness fails to eliminate from the stable or cow-yard. Besides these, solid particles, hair, etc., mix with the milk, which, though they may be removed by the customary straining, have lain long enough in the milk to contaminate it.

We who realize the necessity of constantly irrigating a wound during a surgical operation, in order to prevent its becoming septic from the air of even the most cleanly operating-room, must appreciate how utterly futile all efforts are to maintain the aseptic character of cow's milk as it flows from the udder. If we cannot fully accomplish such an aim, however, it is proper that an effort be made to diminish the chance for contamination by insisting upon scrupulous cleanliness of the stable, the cow, the milker and the milk receptacle. A bucket has recently been invented which is provided with a rubber cover and thus prevents to a great extent the gross contamination of the milk. The milking-tube would be very useful also, because by it the milk could be made to flow directly into a bottle; but this mode of milking is adapted only to cases in which a small supply is required by persons who own a cow.

The feeding and management of the cow are important, but can only be referred to here without entering into details.

The method recommended in 1819 by a German physician, Dr. Twierlein, of utilizing the goat as a wet-nurse, possesses considerable merit. It may be a troublesome method and, æsthetically, an absurd one. But in view of the fact brought out by the

bacteriological researches referred to, the practice deserves a fair trial. Goats may be selected that have been rendered docile by training and practice when quite young and thus become useful for directly nursing the infant. Some inventive mind may devise a long nursing-tube with exhausting cup and nipple-shield, which may enable the infant to lie upon the mother's lap and draw its nourishment without being placed in contact with the animal. In view of the immense importance of this subject, our founding asylums might very properly undertake experiments in this direction. It is certain that far more valuable results may be expected from experiments in this direction than from any therapeutic research or chemical investigation of other artificial foods.

Next in order, to prevent the access of contaminating matter, comes the destruction of such germs as may have been produced already, and which, if left alone, would surely go on and multiply until their presence is demonstrated by souring. Sterilization of cow's milk must and will be a most valuable preventive of summer diarrhoea. Unfortunately, however, the directions hitherto published for the process are either too complicated or too indefinite to be of practical utility in the household. Soxhlet's apparatus nearly fulfils the indication, but it is cumbersome and expensive. Rotch, Jefferies and Caille have given directions for steaming or boiling the milk from fifteen to twenty minutes, and they have succeeded in producing a milk which does not turn sour for a long time. The fact that such milk failed to turn sour is accepted by these able and conscientious writers as evidence that the milk is sterilized. But this is an error as Pasteur, Hueppe, Löffler, Lister and others have clearly demonstrated. Pasteur has shown that after boiling milk fifteen or twenty minutes the bacteria are indeed killed, but there is a development of infusoria *which do not render milk sour*, but which may nevertheless separate the casein *under an alkaline reaction*. Löffler found that, after boiling milk ten to twenty minutes and allowing it to stand, he was able to cultivate at least four different kinds of bacilli capable of producing spores, growing in milk and precipitating casein, *under alkaline reaction* (*Berl. klin. Wochenschrift*, 1887, p. 630). Schröder and von Dusch have demonstrated, and Pasteur has confirmed their conclusion, *that boiling is insufficient for the destruction of bacteria and spores, but that a continuous exposure for half an hour of the milk to a temperature of 130° C. (266° F.) is required to sterilize milk completely*.

Here, then, we have a standard for practical purposes. This may explain, by the way, why Caille, in his valuable experiments (*Dietetic Gazette*, April, 1888), did not obtain quite as good results from his method as from boiling milk in Soxhlet's apparatus for thirty minutes. The latter, boiled under pressure, remained good eighteen days, while the milk he

boiled fifteen minutes only in open bottles was sour after five days, because it never reached a temperature above 212° F. As the absence of acidity, by taste or smell or litmus test, does not prove the complete sterilization of milk, it cannot be asserted that the milk in these experiments was so sterilized.

Fortunately the boiling of cow's milk is a great advantage, inasmuch as "boiled milk produces a much finer coagulum and is to be preferred otherwise; while concerning the length of its stay in the stomach, its behavior in the intestine, and the abnormal fermentation processes, there are no definite observations, we may regard it in these respects as the same as mother's milk" (Escherich, *Journal für Kinderk.*, October, 1887). This is not a recent discovery, however, inasmuch as A. Jacobi advised boiling of milk in 1875 already, and J. Albu ("Milchnahrung und Milchkuren," 1881) recommends Bertling's apparatus for boiling milk under pressure for twenty minutes. He states that coagulation germs are destroyed, as are also those of tuberculosis, typhus, scarlatina and diphtheria. He also states that cow-casein is made more soluble and digestible. His experiments and results have been repeated by Salkowski, who at the instance of Virchow made investigations of Boesken's process of boiling milk under pressure. Soltmann (*Berl. klin. Woch.*, May 29, 1882) says that boiling milk in Bertling's apparatus destroys germs and renders the casein finely flocculent. Reichman (*Archiv für klin. Med.*, Bd. 14, No. 6) experimented on nine adults in the digestion of milk, and found that while 10 ounces of raw milk left the healthy stomach four hours after being imbibed, boiled milk was digested in two and a half hours, and that the casein lumps were much finer in the latter. Smaller quantities, as 3 ounces of boiled milk, were digested in forty-five minutes. I have recently had occasion to ascertain how rapidly boiled milk, taken hot, is digested. I had the stomach of a dyspeptic washed out two hours after taking twelve ounces of hot milk, and found no curds, although mucus was abundant. Hence, boiling milk for infants will not only facilitate digestion, by softening the casein, but, if the boiling can be done under strong pressure, so as to raise the temperature to 266° F., it will also completely sterilize the milk. As the latter cannot be accomplished in a simple apparatus, we may approximate it by boiling the milk, in imitation of Soxhlet's plan, in tightly stoppered, strong glass bottles. A lower temperature, 230° F., will suffice, if it is continued for two hours (Schröder, von Dusch).

When the facts here referred to receive general recognition in the profession, dairymen will doubtless find it to their interest to obtain proper apparatus for sterilizing large quantities of milk, and delivering it in appropriate, sealed vessels to consumers for the use of infants in large cities.

Next in importance to the proper selection of the food comes the hygienic management of the infant. It is a well-known fact that impure air, overcrowding and want of cleanliness conspire to render the morbidity and mortality from the disease greater in cities than in the rural districts. The same rule holds good here which, as mentioned above, applies to all diseases connected with microorganisms, whose multiplication is furthered by unsanitary conditions. The infant should receive a daily bath of tepid water, and I regard a rapid sponging subsequently with a sponge wrung out of cold water, followed by rapid drying and friction, as a most valuable aid in preserving the tone and resisting powers of infants over six months old. The baby should be almost constantly in the open air; it should be kept cool, however, and never exposed to the direct rays of the sun in midsummer. A proper amount of undisturbed sleep should be provided, and all disturbances of the nervous system by excessive playing and fondling must be avoided. The infant should vegetate; its days should pass away calmly and in the utmost comfort. Only by thus shielding it against untoward conditions may the helpless, artificially reared human young be safely tided over the dangers which the advent of summer strews in its path. Even the poorest mother may execute these simple suggestions with regard to the hygienic management of the infant.

A word may here be said of teething as a predisposing cause of summer diarrhœa, because necessity of proper management of the so-called dangerous period is so often urged upon mothers. Chapters have been written on this subject by the older authors, but the gum lance has happily been relegated to the drawer containing useless instruments. May it ever remain there!

Teething requires no special hygienic management, certainly not the aid of the gum lancet. While it may be true that during the evolution of the teeth, the nervous system and probably the digestive organs are in a more or less erethic condition, the fact must not be lost sight of, that this is a natural process which in the large majority of cases proceeds without any effect upon the system, provided there be no other disturbing element in operation. We do not encounter diarrhœa from teething in midwinter, nor later in life when the digestive organs are no longer in a susceptible condition.

The second summer is usually dreaded. The reason is obvious; even a breast-fed infant will then be weaned, and be subjected to the influences of food whose preparation or selection may be improper. The indiscriminate use of articles of food obtained from the table of its elders must be prevented, and ordinary hygienic rules, referred to above, must be enforced in order that diarrhœa be prevented during the teething period.

In connection with prophylaxis of summer diarrhoea, attention to the infant's mouth is important. Escherich in speaking of the normal digestion of the infant says:

"In the mouth the germ-free human milk undergoes no change, except its admixture with saliva and with the *bacteria residing in the oral cavity, which surely cannot be without significance in the development of many mycotic intestinal troubles.*"

It is advisable, therefore, during the summer months to cleanse the mouth with a weak solution of boric acid or salicylate of sodium before the baby nurses. Sudden changes of temperature, which are liable to occur at night in August in this climate, and to which cases of diarrhoea may often be traced, are best guarded against by a flannel bandage around the abdomen and the constant use of socks.

Having considered the prophylaxis of summer diarrhoea in the light of the modern theory of its etiology, we may now proceed to the consideration of its curative treatment.

While it may be interesting scientifically to divide the summer diarrhoea of infants as Lesage and others have done, into several types, it will be of little practical value, since the fact remains that true summer diarrhoea is chiefly due to the presence of bacteria of various kinds which set up in the gastro-intestinal canal fermentation and consequent inflammatory action, resulting in lesions which are pretty uniform in character, and objective manifestations.

The indications of treatment are:

1st. To diminish or remove the source of bacterial supply.

2d. To neutralize the disturbance produced by the bacteria.

3d. To remove them from the intestinal tract.

4th. To meet the nervous prostration, inanition, exhaustion and other manifestations due to the diarrhoea.

1st. To accomplish the first object will only be required in an artificially fed infant. A wet-nurse should, if possible, be procured. This being impossible, it is necessary to look into the mode of preparing the food supply. Sterilization of the milk and scrupulous attention to its preparation for the bottle are of the utmost importance, because in the diseased condition of the gastro-intestinal canal, which now contains quantities of fermenting material, bacteria introduced by the food will multiply more rapidly, as Lister has shown by his experiment of the effect of a drop of milk containing the bacteria of fermentation on any culture fluids. Even if vomiting be not present, the withdrawal of milk, for a short period, will be of great value. Barley-water, rice-water and meat broths, which have been deprived of fats, and which have been thoroughly

boiled for half an hour, and rapidly cooled just before using, offer an excellent substitute for milk. A solution of white of egg in water, which has been sterilized by long boiling and cooled, one egg to the pint, taken cold, and in small quantities, is also a valuable nutriment, as it may be absorbed without requiring digestion. This may be continued until the stools assume a more normal appearance and consistence, when the regular food, or some one of the predigested foods, containing dextrin may be gradually resorted to.

2d. *To neutralize the disturbance produced by the ingested and multiplying bacteria.* If we have nausea and vomiting, rest of the stomach stands first and foremost, far beyond all other remedies, unless it be the cleansing of the stomach by irrigation, as recommended by Epstein. I have had no experience with the latter, but it is doubtless of value, and I shall resort to it this summer. The stomach cannot be at rest until all fermenting material be removed from it. This I have hitherto accomplished by the copious administration, by the spoon or nursing bottle, of warm water, to which a small quantity of salt has been added. It is difficult, however, to execute this treatment. Epstein's irrigation of the stomach, by means of a soft rubber stomach-tube of small dimensions, would certainly be a great improvement.

The enforcement of absolute abstinence from food and drink, in the early stage of summer diarrhoea, cannot be too strongly impressed upon the mother. It will require all the *morale* she possesses to execute the physician's directions. She may be convinced by the argument that since everything the baby takes is rejected, it is futile to continue to feed it or give it even water. When practising at Washington Heights it was my custom to send the women who brought their pale and shrivelled infants to me, during my morning hour, with a history of purging and vomiting during the preceding night, to a certain broad-limbed tree standing upon a rocky elevation at 165th Street, and instructing them there to await my arrival. Having neither food nor drink with them, the complete rest of the stomach and bowels was enforced, and this together with the exposure to pure air, under the shade of the tree, usually so restored these little ones in a few hours, that I have found them asleep and free from vomiting when I drove up to the extemporaneous sanitarium.

It is not only difficult to convince the mother that baby will not starve to death, if food and drink are withheld for six or eight hours, but I have known intelligent physicians to labor under the same delusion. I well remember meeting, in consultation, a bright young colleague in the case of the largest six months' infant I have ever seen. The baby, though reared on the breast, was suffering from vomiting and purging, chiefly the former. Vomiting had been uninterrupted for twenty-four hours, and had

lately produced serious collapse manifestations, which alarmed the attendant. But despite the refusal of the infant to take the constantly proffered breast, the anxious attendant had milk drawn from it, and forced the child to take it from a spoon. Complete abstinence from this course reestablished the integrity of the stomach, and change of food to broth, and, afterward, diluted cow's milk, together with rectal irrigation, restored the child to health.

There are few cases of vomiting which will not yield to complete abstinence from food and drink for a few hours, after the stomach has been thoroughly cleansed. Mustard sinapisms to the epigastrium, and anti-emetic medicines only serve to disturb the patient. If rest does not bring relief, I resort to the old-fashioned Dewees' mixture of

R.—Magnesiæ 3 ss.
Spts. ammon. arom. 3 ss.
Aquæ menth. pip. 3 ij.—M.

Sig.—Thirty drops every half hour.

This checks fermentation and appears to soothe the irritation effectually. When this mixture cannot be retained at all, a dose of calomel, one-half to two grains, will almost invariably be retained, if administered immediately after vomiting, laid on a teaspoonful of water, without stirring, or placed dry upon the tongue, and followed by a few drops of water. Calomel not only acts as a parasiticide, but fulfils the indication of removing irritating matters from the intestinal canal.

3d. *To remove the bacteria from the intestinal canal* is a leading indication. It is important that all fermenting material which offers a nidus for their development should be swept out. A full dose of castor oil, or when the stomach is irritable a dose of calomel, will remove the entire mass from the upper tract. It will not be necessary to repeat the purgative if it is followed by thorough irrigation of the large intestine with sterilized warm water. I believe that in this procedure we possess a most valuable remedial measure for summer diarrhoea. But it must be borne in mind that irrigation cannot be accomplished by an *enema* of warm water. This would act as an irritant and create additional disturbance. A rubber horse catheter, or a large Nélaton catheter, should be used for this purpose, because its walls are firm and yet elastic, and its length admits of its deep introduction. It should be attached to the pipe of a fountain syringe, containing one quart of water that has been boiled for half an hour, and in which half a drachm of bicarbonate of sodium has been dissolved. The infant is placed upon the abdomen in the lap of an attendant. The tube anointed with vaseline, and firmly held between the thumb and index finger of the right hand, is gently introduced into the anus. The pressure of the fingers is now somewhat relaxed, in order that the water may flow,

while the tube is being gently but firmly pushed into the intestinal canal. Whenever it meets an obstruction it should be withdrawn a little, and gently persuaded to pass upward. Sometimes it is more readily introduced when disconnected from the syringe. When the upper point has reached the transverse colon, or cannot be introduced further, it is held quietly until about a quart of water has passed. There will be no distention, because the pressure of the child's body upon the nurse's lap will aid in expelling the water as rapidly as it is introduced. I have occasionally added with advantage one-half grain bichloride of mercury to the quart of water, allowing always an extra pint of plain water to follow the medicated injection, to prevent poisoning.

Experience has convinced me that thorough irrigation of the large intestine, administered by the physician or by a competent nurse, under special instruction, every three, four or five hours, lessens the number and changes the character of the movements, and produces a most soothing effect upon the patient. I have frequently seen infants, who had been tossing in pain, purging and vomiting, drop into a gentle slumber, while the water was still flowing. Almost invariably a quiet slumber follows the irrigation, the purging ceases, or is much modified, and the whole aspect of the case is changed. The result of the irrigation is the removal of bacteria, mucus, undigested food and fermenting material. Cantani has in the treatment of cholera succeeded in reaching the stomach by such irrigations. J. L. Smith has found the lesions in summer diarrhoea "in all but one of eighty cases in the colon, in thirty-nine, nearly or quite through its entire extent; in fourteen it was confined to the descending colon; the portion of colon most frequently inflamed is just above the sigmoid flexure."

"In the large intestine, the cæcum, sigmoid flexure, and upper part of rectum were the portions in which the most advanced lesions were met with. In the small intestine the changes were generally limited to the lower part of the ileum," says Holt in THE MEDICAL NEWS of June 9, 1888.

Hence we may safely assume that the irrigations reach most of the diseased surface, and thus we follow the indications of modern therapeutics, to treat local troubles by local measures, as far as possible. The inflamed parts are not only soothed by these warm irrigations, but the *materies morbi*, which maintain the disease, are removed and neutralized. An incidental advantage, too, is the stimulation of the hepatic function, which this imitation of Krull's injections produces.

While I have, in cases of dysentery, resorted to the addition of bichloride of mercury with advantage, I regard the addition of antiseptics to the irrigating fluid as inadvisable, inasmuch as the solutions can-

not be made sufficiently concentrated to effect the destruction of germs and spores without endangering the integrity of the mucous membrane, or menacing the system by poisoning from absorption. Further investigations may develop a perfected medicinal irrigation. For instance, Cantani's method of tannin irrigations in cholera may be here initiated. In chronic and subacute cases these may be valuable, by local astringent action.

The internal administration of antiseptics, especially salicylate of sodium and naphthalin, has found able advocates, but if we consider how large a quantity would be required to sterilize so extensive a surface, we can scarcely expect any decided results from this practice. My own experience is confined to small doses ($\frac{1}{4}$ grain) of bichloride of mercury, and large doses of bismuth, both of which have proven valuable, chiefly in subacute or chronic cases; the former when the stools were clayey and offensive, the latter when they were thin and choleraic.

I must say, however, that in recent years it has been my constant aim to eliminate medicinal treatment from the management of acute summer diarrhoea, as from other acute diseases. It is of paramount importance to maintain the integrity of the stomach, which must be more or less impaired by the administration of drugs. When the stomach is restored sufficiently to receive and retain anything, I regard the introduction of food as far more important. Medicines should be administered *per rectum*, if possible, or avoided altogether. Doubtless our predecessors of the Meigs, Dewees and West school have had good results from "antiphlogistic" doses of mercury, because its antiseptic and purgative properties removed the bacteria and irritating matter, but they found it necessary to guard it by the addition of opiates, to prevent harmful purgation, while they "stimulated the liver." If we can disinfect, cleanse and soothe the intestinal tract, and at the same time "stimulate the liver" by irrigations, the necessity of medicinal remedies becomes less pronounced.

4th. *To meet the manifestations due to the diarrhoea, and probably to absorption of ptomaines* is a plain indication. Prostration of the vital powers is often rapid and pronounced, threatening a speedy, fatal issue in many cases, from the very inception of the disease. I confess that, until recent years, the true cause of this alarming condition escaped me. Since the recognition of high body temperature as a cause of the prostration, the prognosis of these cases has become far more favorable in my hands.

An elevated temperature range frequently marks the advent of the summer diarrhoea, especially the more alarming types. Indeed, if the rectal temperature were more systematically observed, it would be discovered that a large number of severe cases are

ushered in with and maintain a temperature ranging from 102° to 106°. So deceptive are the cool skin (especially of the extremities) and the clammy sweat produced by relaxation consequent upon the nausea, vomiting and diarrhoea, that the high internal temperature is liable to escape observation.

Since I have, during the past eight years, made it an invariable rule to ascertain the exact rectal temperature, I have again and again been surprised by the presence of hyperpyrexia when I least expected it.

The most gratifying result of this practice has been the comfort and improvement of the patient accomplished by the reduction of the high temperature.

I have not resorted to medicinal antipyretics with sufficient frequency to offer reliable deductions. But the graduated cold bath, reduced from 95° to 80°, and continued until the thermometer in the rectum registers a decided fall of temperature, has brought me results which I have obtained from no other remedy. The reduction of temperature, if it can be maintained for twenty-four hours, and the stimulus of reaction from the cold-bath will, in acute summer diarrhoea, completely change the entire aspect of many cases. Vomiting and diarrhoea often cease, the most alarming head symptoms, restlessness, jactitation, screaming and squinting, are almost invariably removed or modified; sleep follows, and convalescence may be established in a brief time, if the cold-bath is resorted to early. After the bath the child should be wrapped in a sheet wrung out of the bath water, reaching from the neck to the knees, while the warmth of the feet is maintained by hot-water bags.

This paper being clinical, I will not enter into a theoretical explanation of the action of cold water in these acute cases. The following case will illustrate the method of administration and its results:

P. S., infant, six months old, vigorous and healthy, living in one of our best houses on the banks of the Hudson, had been weaned one month. Since that time he had been suffering from occasional diarrhoea, which had been treated with more or less success by my friend, the late Dr. Frothingham, and myself for a week. On July 30, 1881, vomiting and choleraic stools prompted the mother to summon me in haste. I found the little fellow a changed being; his features were pinched, skin cold and clammy, eyes sunken; he could retain nothing, the bowels ejected a thin, green fluid about every half hour, sometimes more frequently. Drs. A. Jacobi and J. Lewis Smith were summoned in consultation by my request. The former was absent; the latter reached the house about five hours after the messenger was despatched.

In the meantime the symptoms grew more and more threatening, the pulse began to fail, the child lay with upturned eyes, pinched features, rapid, shallow respiration and cold extremities—on the

brink of dissolution. It occurred to me to take the rectal temperature, and, to my great surprise, I found it 106° F. A cold-bath was immediately ordered, although the proposition so shocked the mother that she wrung her hands in despair, lest the infant should succumb to the cold. A large bathtub was half filled with warm water until the temperature reached 90°. The infant, whose stony gaze indicated the approach of eclampsia or impending dissolution, was submerged in the water, except the head; the lower and upper extremities were held up and chafed. Cold water was turned on, and ice-water was added, while the water was permitted to flow from the tub. In ten minutes the temperature of the water was reduced to 80°. A smile now passed over the baby's face, his eyes lost the stare, and he revived. His rectal temperature began to fall, and in ten minutes reached 100°. He was now wrapped in a cloth wrung out of water at 80°, from neck to knees; hot-water bags were applied to the extremities, and he was carefully covered. He fell into a sweet slumber, from which he awoke when Dr. Smith arrived, to find him rescued from immediate danger. A wet-nurse and careful attention restored the child in a few days.

Inanition caused by the diarrhoea must be met by a cautious selection of food. I have dwelt upon the fact that in health cow's milk, sterilized shortly after leaving the udder, offers an excellent substitute for human milk, and is a good prophylactic against summer diarrhoea, because, as Escherich and Uffelmann have shown, the healthy infant is perfectly competent to dispose of large quantities of cow's casein. But, when the digestive organs are enfeebled by disease, cow's casein will not be readily taken up, and will act as an irritant to the bowels. As broths and solutions of albumen can be used only as temporary substitutes, one of the prepared foods, constructed from pure, sterilized, partly pre-digested milk, with a proper proportion of dextrin and sugar of milk, to approximate in food value to human milk, will be found of great value. Here we need a partially predigested food, whose unirritating elements may be quickly taken up by the digestive organs without leaving much residue.

I have reported several cases strikingly illustrating the value of the most recent of these foods two years ago, and I have, since that time, observed similar results in two cases, one of these an infant whose mother had been compelled to accept a position as wet-nurse, and which was being fed on condensed milk. This baby had twenty-five stools a day, and was shrivelling up, when I stopped all nourishment, gave brandy and water, and then put him on the prepared food, which, in a few days, produced a complete change.

Care is requisite in warning mothers not to add milk to these prepared foods containing milk, which they will be tempted to do in order to concentrate the food. It is important to impress upon them the

danger of overfeeding in disease as well as in health; to this cause much infantile gastro-intestinal disturbance may be charged. There is no limit to the amount a bottle-fed child takes, except its own free will and capacity. The former is limited by the supply in breast-feeding, hence the latter is rarely overtaxed. But in bottle-feeding the supply is unlimited: hence the quantity should be carefully guarded, and should be made appropriate to the age and digestive powers of the recipient.

Alcoholic stimulants are valuable as aids to tide over the danger of collapse and debility from inanition. Good whiskey and brandy are probably the best. Opiates are the only medicinal remedies that possess absolute effects in checking peristaltic action. I now have little confidence in the various astringents, which I formerly used extensively. As they were usually combined with opiates, it was impossible to judge their intrinsic value. After all irritating matter has been removed from the gastro-intestinal tract, opiates are most valuable measures for allaying the irritation of the intestinal canal and comforting the patient, but their administration has hitherto been too indiscriminate.

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MEDICAL PROGRESS.

On Amylene Hydrate.—DR. LARES, in an article in the *Berliner klin. Woch.*, of May 21, 1888, presents the following conclusions:

1. Amylene hydrate is a very useful hypnotic, which may be given in two or three times as large a dose as chloral hydrate.
2. It operates somewhat less certainly than chloral hydrate and morphine.
3. Unpleasant accidents (excitement, slight drunken-like stupor) were very seldom observed. Grave accidents were never observed.
4. A tolerance, relative to diminution in efficiency, was not noticed within three months.
5. The deep and refreshing nature of the sleep obtained was praised oftener than in the case of any other sleep-producing means.

Ectocardia Cured by a Plastic Operation.—PROF. LAN-
NELONGUE, of Paris, recently presented to the Académie des Sciences a very remarkable case of deformity of the chest wall, with ectopia of the heart, which he had dealt with successfully by operation. The patient was a female child, six days old, well formed in every part except the throax. On the front of the chest over the middle of the sternum there was a circular ulcer, rather larger than a franc piece, the base being formed by a yellowish membrane which appeared to be becoming gangrenous. It was already detached from the edges of the ulcer at several points, and thus only imperfectly closed the aperture into the chest. Each beat of the heart pushed it forward, and on applying the finger during systole the hardening of the ventricular walls as they contracted could be distinctly felt. The inner ends of

the clavicle articulated below with the first rib, and appeared to be free internally and above; the sternum was entirely wanting between them. This gap in the osseous wall of the chest extended downward in the middle line; the sternum appearing to be represented on each side only by a narrow strip of bone running downward and obliquely inward, and finally joining the corresponding piece below the median ulcer already referred to. The deficiency in the bony chest wall was therefore of the shape of an isosceles triangle, the apex being below at the ensiform cartilage and the base above at a line joining the inner ends of the two clavicles. The side of the triangle measured one and a half, and the base one inch. The circular ulcer was, as it were, inscribed in this triangle. On inspiration the chest wall corresponding to the malformed part of the skeleton was drawn in, so that a hollow half an inch deep was formed at the upper part; in expiration, on the other hand, it bulged markedly forward.

A few days after the little patient was first seen, the remains of the "obturator" membrane at the bottom of the ulcer disappeared; the pericardium was seen to be entirely wanting; the apex of the heart projected outside the chest, and the whole anterior surface of the ventricles was exposed. The hole in the skin became gradually smaller owing to the formation of large fleshy granulations, which pressed on the apex and ventricles of the heart, and it was obvious that immediate surgical interference was necessary to prevent most serious disturbances of the circulation. M. Lannelongue therefore made two vertical incisions on each side, six-tenths of an inch to the other side of the ulcer; the flaps thus formed were sufficiently loosened to allow of their internal edges being brought together over the opening in the chest wall, where they were fixed by three hair sutures. Only a few drops of blood were lost; the operation was not followed by any constitutional disturbance, and the wound was entirely healed in twenty days. Two months after the operation the child was in perfect health. M. Lannelongue points out that in this way he transformed the case from one of "ectocardia" into one of "subcutaneous ectopia." He thinks it possible that the ectopia, which is at present extra-thoracic, may in time, as the heart develops, become intra-thoracic. Professor Verneuil, in presenting M. Lannelongue's communication to the Academy, remarked that this was the first time such a procedure had ever been attempted.—*British Medical Journal*, May 26, 1888.

The Treatment of Flatulent Dyspepsia.—PEPPER, in a recent clinical lecture, stated that flatulence may result from the excessive formation of gas. Under these circumstances, such remedies as sulphurous acid, which is a powerful antiseptic, will be found useful. It may be given alone or combined with small doses of strychnia. He prescribed as follows:

R.—Acidi sulphurosi, . . . 3iiss vel 3ij.
Strych. sulph. . . . gr. ss.
Tr. card. comp., . . . 3ss.
Aqueæ, ad 3iv.

Sig.—One drachm after meals, in water.

You may resort to a different class of remedies and give creasote. This is a local stimulant to the stomach, and in atonic cases is of service. It is at the same time

a powerful antiseptic and anti-fermentative agent. Creasote is best given one-half or one hour after meals, when the process of fermentation is about beginning. At this time the gastric digestion should have passed through the acid stage, and the contents of the stomach should be neutral or alkaline. Given at this time, the creasote may be advantageously combined with an alkali, as sodium bicarbonate.

R.—Creasote gtt. x.
Sodii bicarb. 3ij.
Pulv. acaciæ, q. s.
Aqueæ, 3v.

Sig.—Two drachms one hour after meals.

In place of the sodium bicarbonate in the above formula the subnitrate of bismuth may be employed.

If it is recognized that there is not only a state of atony with a tendency to fermentation, but that there is also a deficiency of gastric power, pepsin or ingluvin may be given. Pepsin is best taken in acid mixtures, and should be given at the acid stage of the digestion. At the same time, if the administration of the drug is postponed for a short time after meals, it comes at a time when the power of the gastric juice is about exhausted.

R.—Pepsin. fort. 3j.
Creasot. gtt. x.
Bis. sub. carb. 3 ijs.—M.
Et ft. pulv. No. xxx.

One of these powders, in a small gelatine capsule, can be given one hour after each meal.

Ingluvin is a powerful digestive agent, and may be substituted for the pepsin. I have found it of service in cases where pepsin does not work well, and I should be disposed to say, where the mucous membrane of the stomach is decidedly irritable.

Again, in this same line of thought, we have agents, like powdered charcoal, which act as absorbents of the gases, and are, at the same time, anti-putrefactive and anti-fermentative in their action. Powdered charcoal, with soda or bismuth, may be given a couple of hours after meals, and in the class of cases of which I have been speaking, may afford a great deal of temporary relief. When charcoal is given, the patient should be informed that it will cause blackening of the stools.—*The Polyclinic*, May, 1888.

Intravenous Injection of Sodium Carbonate in Diabetic Coma.—HESSE reports a case of diabetic coma temporarily improved by the intravenous injection of eight ounces of a 4 per cent. solution of sodium carbonate. He adds three cases collected from the literature of the subject.—*Berliner klinische Wochenschrift*, May 7, 1888.

Intrapleural Injections of Sterilized Air.—At a recent meeting of the Academy of Medicine PROF. POTAIN presented a patient, a young man twenty-three years of age, who had been the subject of tuberculosis, and who had been admitted into his ward in the month of June last with a pneumothorax and an extensive pleuritic effusion, which were completely cured by a new operative procedure, which consisted in intrapleural injections of sterilized air. Considering that the sudden withdrawal of the totality of the liquid or its extraction in several days

might equally have grave inconveniences, he decided upon replacing the liquid, as the latter was being withdrawn by a body much less injurious—that is, by sterilized air; and it was thus that, after four punctures practised in the space of five months, he was able to cure this patient, not only of his pneumothorax and of his pleuritic effusion, but also of his tuberculosis. This was proved by the sputa and the pleuritic fluid, which at first contained numerous tuberculous bacilli, but from which they were now perfectly free. The learned professor exhibited the phials and the divers instruments which constitute the technique of the operation. He then described the *modus agendi* and the divers phases of the principal operation, and of the successive operations. He applied the same treatment to two other patients affected with pneumothorax of tuberculous origin, and with equal success.

The following is a summary of the conclusions arrived at by the author: 1. It is possible completely to evacuate the liquid of pleuritic effusions consecutive to pneumothorax, on the condition of substituting for it sterilized air. 2. By being disengaged of all germs by its filtration through cotton, the air is deprived of injurious action, and does not provoke any alteration of the pleuritic liquids. 3. This practice suppresses the grave dangers which result from the presence of a large quantity of liquid in the pleural cavity, or from the rapid evacuation of a great effusion. 4. It permits, on the other hand, the avoidance of serious inconveniences, and of frequently renewed punctures, and saves the lungs from the possibility of a slow and progressive distention. 5. Finally, by leaving for a long time the lungs of a patient in repose and inactivity, the cicatrization and the definitive cure of the tuberculous lesions are promoted.—*Lancet*, June 2, 1888.

Experimental Researches on Tuberculosis.—DR. CORNET publishes in the *Internationale Klinische Rundschau* an account of a series of experimental investigations on tuberculosis which he has been conducting for the last two years in the Berlin Hygienic Institute. The experiments were divided into three groups: the first of these dealing with the air and dust in dwelling-houses, hospitals, etc.; the second group comprising observations directed to the parts of the body affected by tubercle artificially introduced in different situations; and the third group consisting of attempts to solve the problem of the possibility of rendering the tissues unsuitable as a cultivating medium for tubercle bacilli. In order to examine the walls and floors of rooms the surfaces were washed over with sterilized sponges, which were then used to inoculate broth, the resulting culture being injected into the abdominal walls of three guinea-pigs. The animals (if they did not die of some intercurrent affection) were killed forty days later, and a careful necropsy made. Twenty-one hospital wards, in which most of the patients were phthisical, were examined in this way, the result being that from the dust of fifteen of them tuberculosis was set up. Similar observations made in lunatic asylums showed that the walls of these establishments are very frequently infected with the tubercle. Private houses where persons affected with phthisis had lived gave likewise very distinct positive results; out-patient departments and surgical wards appeared, on the other hand, to harbor no tubercle. One

important observation made was that where phthisical people had been in the habit of expectorating on the floor, this was certain to yield infectious cultures, whereas in cases where handkerchiefs or spittoons had always been used the liability of the dust to prove infectious was very greatly diminished.

Regarding the organs affected, Dr. Cornet fully confirms Koch's observation that, except the actual point of introduction, the organs most affected are the nearest lymphatic glands; thus, when inhalation is the mode of infection adopted, the bronchial glands are the organs most affected; when injections are made into the abdominal walls, the inguinal glands of the side selected show the greatest degree of tuberculous infection; and when the virus is introduced directly into the abdominal cavity, the omentum is the part most affected.

The therapeutical observations were made with tannin, "penguin," sulphuretted hydrogen water, menthol, corrosive sublimate, creoline and creasote, all of which were given in much larger doses in relation to the body weight than anyone would think of prescribing for human beings. In the case of corrosive sublimate toxic symptoms were induced before the tubercle was injected, and care was taken with all the other remedies that the system was well saturated with them. Notwithstanding all this, however, every animal died, not the slightest hindrance being apparently caused to the development of the tubercle bacilli by any of the remedies. Dr. Cornet remarks that, of course, the results of experiments on guinea-pigs must not be taken as necessarily holding good for human subjects, as he has himself repeatedly proved the great value of creasote in the treatment of phthisis. Again, some infected guinea-pigs were sent to Davos, others being kept in Berlin, the conditions of life of the two sets of animals being rendered as similar as possible. All of them died in about the same time, and no perceptible difference was found in the degree of tuberculous infection of the tissues in the two classes of cases. Dr. Cornet promises to publish the details of all his observations in the *Zeitschrift für Hygiene*.—*Lancet*, May 19, 1888.

An Antiseptic Paste.—L'Union Médicale of May 19th, 1888, gives the following formula for an antiseptic paste:

Iodoform.	gr. 40.
Essen. eucalypti	3 5.
Paraffin.	3 12½.
Vaselin.	3 12½.

This paste is especially adapted to the treatment of ulcers.

Sulphonal.—MR. ERNEST LOVEGROVE states that the effects of sulphonal upon patients is very discouraging. He finds that for several hours after taking the drug no appreciable effect could be observed, but during the greater part of the following day there was extreme drowsiness, also considerable cyanosis. The best mode of administering sulphonal is to mix it with pulv. tragacanth co. and water.—*British Medical Journal*, May 26, 1888.

Dilatation of the Stomach in Diseases calling for Surgical Treatment.—BAZY, in the *Gazette Hebdomadaire* of May 18, 1888, writes that a dilated stomach furnishes a good

lodging for septic germs, which may give rise to constitutional infection after operations. He advises the diagnosis of dilated stomach before operation, and the use of proper gastro-intestinal disinfectants.

The Treatment of Diseases of the Stomach.—DR. P. C. KNAPP, in an instructive article in the *Boston Med. and Surg. Journal* of June 7, 1888, reviews the recent advances in the diagnosis of gastric disease, especially as regards the presence or absence of free hydrochloric acid in the gastric juice. These new methods, he claims, will alter our present method of treatment. In the majority of cases there is a normal or excessive amount of hydrochloric acid; hence the common exhibition of it is needless and often injurious. Where the acid is in excess we should not depend on alkalis. The stomach should be washed out at night, Carlsbad water given in the morning, and the stomach given increased work by giving the patient an albuminous diet, avoiding carbohydrates. When acid is absent, or much diminished, the ordinary dose (m.v.-x) is much too small. Ewald (*Berlin. klin. Wochenschr.*, Nos. 3, 4, 1886) has calculated that to render neutral juice properly acid, thirty to forty minims should be given after each meal, in three doses fifteen minutes apart, beginning about an hour after meals. When acidity of the stomach is due to lactic acid, from fermentation, this should not be combated solely by alkalis, although Carlsbad may be used. The stomach should be washed out, and hydrochloric acid given, for it will be remembered that when hydrochloric acid is formed during digestion it checks the formation of lactic acid. In catarrh and dilatation, washing out of the stomach is a remedy to be first employed. In muscular insufficiency, strychnine and very mild faradic currents may prove serviceable. In "nervous dyspepsia," as Knapp long believed, special treatment is uncalled for; we must build up the nervous system, and the stomach will take care of itself.

He said nothing of that panacea for all disturbances of digestion, of which at least nineteen varieties are brought to our attention weekly, namely, pepsin. He always acted on the statements which physiologists have been making for years, that pepsin is required for digestion only in small amounts, and that hydrochloric acid is the important factor. In the great majority of cases there is plenty of pepsin in the gastric juice, and the addition of any more is needless, and, therefore, wrong. In a few instances, where partly digested food is to be given, pepsin becomes necessary in its preparation, otherwise the use of pepsin is thoroughly unscientific.

Saline Purgatives in the Treatment of Typhlitis and Peritonitis.—DR. C. W. SUCKLING, in the *British Medical Journal* of May 26, 1888, states that in typhlitis due to fecal retention, and in peritonitis from the same cause, saline purgatives are of great value, especially if enemata fail to act. In moderate doses they do not cause peristalsis, their action is quite painless, and they are exceedingly useful in washing away hardened scybala. During their administration the abdomen should be frequently examined, and any accumulation of fluid in the intestines treated by stimulants.

In a case which he narrates, the saline aperient evidently had caused a large flow of fluid into the intestine,

but the bowel was not sufficiently powerful to evacuate it; restoration of tone by stimulants at once enabled the bowel to empty itself.

Injections of Ozone Water in Cancer.—SCHMIDT reports two cases of cancer treated by parenchymatous injection of ozone water in varying proportions. From one to ten injections daily were given, varying with the size of the cancer. No great pain was caused by the injection, and improvement in the condition of the tumors followed. Microscopic examination showed a diminished number of nests of cancer cells. The cases improved rapidly, and the formation of normal connective tissue occurred. No ill effects followed the treatment.—*Wiener medizinische Presse*, No. 19, 1888.

Extirpation of the Gall-bladder.—CRÉDÉ (*Korresp.-Bl. der ärztl. Kreis-u. Bez.-Ver. in Sachsen*, 1888) relates a case of complete extirpation of the gall-bladder for lithiasis and hydrops. The patient, a female, aged twenty-nine years, had suffered with hepatic colic at eighteen, with peritonitis, presumably from the existence of gall-stones, at twenty. In the summer of 1886, she noticed, to the right of the umbilicus, a small, painful tumor, which by February, 1887, had grown to the size of a hen's egg. On the 23d of November, 1887, the abdomen was opened, the gall-bladder, containing five ounces of a cloudy, viscid fluid and forty calculi, with difficulty separated from the liver, and removed; a double ligature being applied to the cystic duct close to the common duct. The patient was out of bed early in January, 1888. She has since been well, has gained flesh and attended to her household duties. Following an attack of vomiting, thirty-six hours after the operation, severe pain was felt at the site of the operation wound. Fever and tenderness set in, and, on the fifth day, the wound was reopened at its middle, and some pus and blood-clots evacuated. This illustrates the danger of secondary hemorrhage from the liver, to control which we are almost powerless. On this account, in the case of anæmic individuals, incision into the gall-bladder, without extirpation, commends itself, but with ligation of the cystic duct. In the case of patients with some degree of resistance, however, the speaker considered complete extirpation indicated as the best method, as leading to the most rapid recovery without leaving fistulæ behind. Of course, operations upon the gall-bladder are not to be performed in all cases of disease of the organ. In most, nature is able to help herself; but there will always be certain cases in which danger to life arises and persists, and operative treatment must be instituted; and it may be said with satisfaction that the methods of operation have already been so far perfected that patients may submit to surgical measures with a prospect of pretty certain success.—*Memorabilien*, May 31, 1888.

The Painless Extraction of Teeth.—To extract teeth without pain, HÉNOQUE and FRÉDET (as reported before the Société de Biologie, at Paris, on February 4th) apply the ether spray to the neighborhood of the external auditory meatus. The anesthesia affects the branches of the trigeminus on the face and suffices for the purpose. The procedure is simple and harmless.—*Memorabilien*, May 31, 1888; from *Zeitschrift für Therapie*, etc., 1888.

THE MEDICAL NEWS.

A WEEKLY JOURNAL
OF MEDICAL SCIENCE.

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SATURDAY, JULY 7, 1888.

THE HEART IN LOCOMOTOR ATAXIA.

BERGER and ROSENBAACH, in 1879, called the attention of the profession, in a brief notice in the *Berliner klinische Wochenschrift*, to the association of aortic insufficiency with locomotor ataxia. They published notes of seven cases without comment. In the following year, ANGEL, in an article in the same journal, entitled "The Coincidence of Heart Lesions with Tabes," reported, in a series of twelve patients suffering from locomotor ataxia, five cases in which there was the sign of aortic insufficiency, namely, a diastolic murmur, present only however after muscular effort, and disappearing during prolonged rest. The murmur was not heard at all in the morning while the patients still remained in bed. This observer regarded the murmur in question as due to abnormal action of the heart-muscle.

GROEDEL, whose opportunities for the study of locomotor ataxia at Bad-Nauheim have been very extensive, regards the occurrence of cardiac affections in this disease as wholly accidental (*Deutsche medicinische Wochenschrift*, May 17, 1888). In this view he concurs with Eulenburg and Erb.

Between 1875 and 1879—namely, at a time when his attention had not yet been especially called to the subject—Groedel noted, in forty-three cases of locomotor ataxia, only two in which the signs of valvular disease were present. The records of this period refer either to absence of heart complications in the other forty-one cases, or to the occasional occurrence of quickening of the pulse rate and peri-

cardial distress and oppression. Between 1880 and the close of 1887, a period during which every case of locomotor ataxia was studied with especial reference to the condition of the heart, valvular lesions were detected in only four out of one hundred and eight cases, and in no instance was he able to recognize the murmur of aortic insufficiency after muscular exertion, as described by Angel.

Cardiac phenomena of a different kind were, however, very frequently observed. These consisted of feeble action of the heart, increased frequency of the contractions, small pulse, faintness of the sounds—manifestations not only common in enfeebled subjects but also in those still well-nourished and strong. The patients presenting these signs frequently complained of palpitation, shortness of breath on exertion, even of occasional attacks of palpitation while at rest and after excitement. In only two instances were these symptoms associated with the signs of dilatation of the right and left chambers of the heart. He concludes that even these symptoms are in no wise characteristic of locomotor ataxia, since they occur in all kinds of chronic maladies associated, as is so commonly the case, with anæmia and neurasthenia. Leyden has noted four cases, and Vulpian one case of locomotor ataxia in which peculiar paroxysmal attacks closely resembling angina pectoris occurred.

Groedel, following Leyden, regards these attacks of paroxysmal precordial anguish and oppression, of which he communicates the notes of two interesting cases, as probably of the nature of irregularly developed girdle pains, or, at least, as neuralgia in the distribution of the cardiac branches of the vagus, as the gastric crises and the laryngeal and bronchial crises are to be referred to the corresponding branches of the vagus.

ANOTHER STEP IN ADVANCE.

In our issue of June 16th, the hope was expressed that other leading medical colleges would soon follow the example of Jefferson in extending the curriculum to three obligatory winter sessions. The College of Physicians and Surgeons, of New York, now publishes a similar announcement. The profession and, more especially, the Alumni of the remaining prominent medical colleges have reason to expect that these schools will now make haste to align themselves with other institutions of the first class. The plea of "financial suicide" will no longer avail in extenuation of further delay. Loss of prestige will, in the end, surely entail the money losses they

wish to avoid. If these chief competitors make the move together, they preserve their present business relations to each other, while they give a much needed lift to the standard of medical education throughout the country. The really meritorious colleges everywhere will see at last that their interests lie in the direction of their inclinations. For, surely, no faithful teacher will deny that he wants to extend the period of study, in order that he may fairly exact higher qualifications from the candidate for the medical degree.

A NEW medical school, under the auspices of the Roman Catholic Church, is projected at Brooklyn, Bishop Loughlin being president of its board of trustees. It will be connected with the St. Mary's Hospital and under the care of the Sisters of Charity, but otherwise will be non-sectarian in its management. According to an Act of the last Legislature, the Faculty of this proposed college will be empowered to grant the usual medical degrees and licenses to practise.

At the last meeting of the British Columbia Medical Council, it was decided to proceed vigorously against unregistered and unqualified practitioners. In pursuance of this policy, a Dr. Millar, an English physician, was, on the 14th inst., brought before the police court at Vancouver, British Columbia, charged with practising his profession in that province without having obtained a license from the Medical Council. Mr. Walker, barrister, of Victoria, B. C., conducted the prosecution on behalf of the Medical Council of British Columbia, and the defendant was fined twenty-five dollars and costs.

It is the intention of the Medical Council to proceed against all parties practising medicine in the province without a license.

THE coming meeting of the British Medical Association at Glasgow, in August, bids fair to be crowned with marked success. The announcements in the English journals of the untiring efforts of all the various committees promise a programme of instruction and entertainment that should crowd the week to overflowing. There is an International Exhibition in successful operation in that city, which will absorb many of the spare half hours of the delegates, and ten different excursions for the closing Saturday have been planned for strangers who wish to get a glimpse of the firths, lochs and hills of romantic mid-Scotland. In the Sanitary Section,

the admirable progress made by the Scotch cities in ambulance work will be illustrated by a fine array of wagons and appliances for both military and civil practice.

THE Société de Biologie, of Paris, at its meeting on June 9th, on the suggestion of Brown-Séquard, resolved to convene an International Physiological Congress next year, at Paris. Brown-Séquard, as chairman, Richet, d'Arsonval and Marey were appointed a committee to make the necessary arrangements.

A SILVER medal was awarded at Amsterdam to Prof. Adamkiewicz, for his investigations upon peptone.

THE Dutch Scientific Society, of Harlem, has awarded Prof. Virchow the Boerhave Medal for Anthropology.

THE prospectus of the new serial issue of clinical lectures, entitled *Berliner Klinik*, to be edited by Fürbringer and Hahn, announces that the opening numbers will consist of two lectures by Professor Senator, upon "The Methods and Aims of Medical Activity," and upon "Icterus, its Origin and Treatment."

PROF. DONDERS has directed that the memorial fund of 57,000 marks (\$14,250), collected by his friends and admirers on the occasion of the anniversary of his seventieth birthday, be devoted to affording means for promising students of the University of Utrecht to continue their studies in ophthalmology and physiology.

THE *British Medical Journal* of June 23d, in commenting on the late Emperor's case, says, "We understand that the illustrious patient had thoroughly made up his mind not to submit to any operation that might shorten his life or destroy his voice. This decision was altogether independent of medical advice, though it was afterward strengthened, as was natural, by the negative results of Sir Morell Mackenzie's clinical and Prof. Virchow's pathological examinations."

THE watchful tendance over a person bent on suicide can be intermitted never. It is related of the wife of a prominent pharmacist of Chicago that she was subject to frequent fits of melancholia that necessitated constant watchfulness, and the removal of all weapons or dangerous articles. The patient was, however, able for a brief period to elude the

eye of her attendant, and immediately took the opportunity to pour oil over her clothing and person, and to set fire to herself, and by this ingenious and horrible expedient put an end to her mental sufferings. For cunning and fortitude, this case will stand as a notable example of the lengths to which those persons whose minds are rendered desperate by depressing emotions will go.

THE friends and pupils of Dr. George Johnson have just presented him with his portrait by Mr. Holl, on the occasion of his retirement from the professorship of Clinical Medicine, after forty-five years service at King's College and King's College Hospital.

THE first report of the work done at the Margaret Williamson Hospital, an American missionary undertaking for the treatment of Chinese women and children, has been published at Shanghai, by Dr. Elizabeth Reifsnyder, Physician-in-charge. It is a well-printed pamphlet of twenty pages, and gives a creditable showing of the relief furnished in the two years ending December 31, 1887: 54,000 patients were received at the Dispensary, and about the same number of prescriptions issued. The Hospital is closed in August and September of each year. The report states that there is already need for larger accommodations and more help; on one very busy day, there were fifty patients turned away. This institution is truly a bright spot in a benighted region.

WE regret to read the announcement by a cablegram from London, dated June 28th, of the death of Dr. J. Milner Fothergill, a medical author well known on both continents. It is less than twenty years ago that he first appeared in print; in 1870, he took the Hastings Prize of the British Medical Association. Several of his writings have been reproduced in this country, in the case of one of his books, even to its third edition, and he was a frequent contributor of letters and papers to our American journals.

DR. BENJAMIN KING, one of the oldest officers on the retired list of the army, died June 24th, in his ninety-second year. He was graduated from West Point in 1807 and served in the war of 1812. He acted as surgeon in the Seminole war and in the Mexican war. He was put upon the retired list about twenty-seven years ago.

SOCIETY PROCEEDINGS.

NEW YORK ACADEMY OF MEDICINE.

SECTION IN PÆDIATRICS.

Stated Meeting, June 27, 1888.

THE CHAIRMAN, J. LEWIS SMITH, M.D., PRESIDING.

DR. A. JACOBI made some

REMARKS ON SUMMER COMPLAINT,

with special reference to their etiology.

DR. A. V. MEIGS, of Philadelphia, then read a paper on

THE DIETETIC MANAGEMENT OF THE SUMMER DIARRHŒA OF INFANTS.

(See page 4.)

DR. S. BARUCH then presented a

CLINICAL STUDY OF THE ETIOLOGY AND TREATMENT OF SUMMER DIARRHŒA OF INFANTS.

(See page 8.)

DR. GEORGE B. FOWLER then reported some

EXPERIMENTS WITH DIFFERENT SPECIMENS OF PEPSIN.

No pure pepsin is in use, he said. The various specimens in the market are prepared from the mucous membrane of the hog's stomach, with varying degrees of care and varying results as to purity. The mucous membrane is first scraped, and, with the pepsin, the mucus of the glands is also removed. A glycerin extract is then made, the pepsin is precipitated, but, as it precipitates, the mucus precipitates also. New extracts are then made, and new precipitates formed; and, finally, the extract is dried, the product being commercial pepsin.

In the experiments which were made, thirteen different specimens, by as many manufacturers, were taken, one grain of each being used for the test. Each specimen was placed in a ten ounce bottle, which also contained eight ounces of a one-half per cent. solution of hydrochloric acid, and twelve hundred grains of egg albumen, which was to be digested. Each bottle was kept at a temperature of 100° F., for six hours, being agitated every half hour, and then allowed to cool. An additional bottle containing the same quantity of albumen and acidulated water, but no pepsin, was placed by the side of the others, for the purpose of comparison with those in which digestion was being accomplished. The results varied greatly. All the albumen was digested, and a clear solution obtained by the pepsin of Parke, Davis & Co. That of Fairchild Bros. & Foster and that of Hawley, were nearly as good. Most of the other specimens showed very weak digestive properties.

Another series of experiments was also made with various medicinal agents, to ascertain the extent to which they operated as inhibitors of digestion, the medicinal substances being placed in bottles similar to those previously described, and containing the same quantity of pepsin, egg albumen and acidulated water.

Salicylate of soda, in twenty grain portions, stopped digestion, apparently fixing the hydrochloric acid. After six hours, digestion had not begun. When portions of three grains were used, digestion was retarded two hours.

Portions of twenty grains of sulphate of quinine stop-

ped digestion, no change having taken place after six hours. When five grains were used, digestion was retarded; when three grains were used, no retarding effect was apparent. Mariani wine also inhibited digestion; half ounce portions caused a chocolate-colored precipitate, no digestive action being apparent.

Acetate of lead, in two grain portions, had no apparent inhibitory effect. Tincture of the chloride of iron, in thirty drop portions, inhibited digestion, its astringent action upon the albumen being very apparent.

Salol, in ten grain portions, caused slight delay in digestive action.

Antifebrin and antipyrin had no apparent inhibitory effect, the same being true of bichloride of mercury and calomel.

Chalk mixture, tincture of kino and tincture of catechu all showed their astringent action, and either delayed or entirely prevented digestion. Resorcin had no inhibitory effect. Prepared chalk, in portions of twenty grains, combined with the albumen mechanically, and no digestion took place.

DR. CAILLÉ responded to Dr. Baruch's statement that the plan which he (Caillé) had proposed for sterilizing milk would not accomplish it. Dr. Caillé had not intended that the term should be used in an exact sense, but only that the method suggested sterilized the milk relatively to raw milk. He thought the conclusions of chemists and bacteriologists, in regard to such diseases as *summer complaint* and the action of foods and drugs, were unsatisfactory, and that we could arrive at trustworthy conclusions for clinical purposes only by means of collective investigation. This would enable us to find out why some children thrive on certain kinds of food, and others do not.

DR. HANWOOD expressed surprise that, in the papers which had referred to feeding, nothing had been said about condensed milk, which, by its mode of preparation and its abundance of sugar, offers great advantages as a food for infants. He had, to his satisfaction, investigated the method by which it was prepared and, in practice, he found it more useful than any other form of food.

DR. A. JACOBI adhered to the opinion which he had expressed in his writings, that condensed milk is not a good food for infants. With reference to the experiments of Dr. Fowler, he was not convinced that tincture of iron is not useful in the treatment of *summer complaint*. One never gave it in thirty drop doses, and it had usually been found efficient and not harmful to the digestive function, when given in small doses. Of course, the administration should be stopped when the stomach became rebellious. It should be remembered that carbonate of lime neutralizes whatever it combines with, and thus delays digestion. This should teach us that alkalies (with, perhaps, the exception of bicarbonate of soda) should not be given after, but before eating. Their action then will be very beneficial, for they will neutralize the harmful fatty acids which are in the stomach at that time, and prepare the organ for the proper performance of digestion.

DR. MEIGS did not agree with Dr. Baruch, that diarrhoea in hand-fed children is rare in winter. Infants with diarrhoea frequently come into the hospitals in the winter-time and die from it. With others, it begins in the hospital, and is alike fatal. It is true that these children were badly nourished and predisposed to dis-

eases of such a character. He thought the consensus of opinion now is that if cow's milk be used as an infant food it should be diluted, and that cream and milk sugar should be added. This makes it quite similar to to woman's milk, which must be the standard.

DR. BARUCH objected strongly to the use of condensed milk, believing it to be one of the most pernicious forms of food which are given to children.

THE ONTARIO MEDICAL ASSOCIATION.

*The Eighth Annual Meeting, held at Toronto,
June 13 and 14, 1888.*

(Specially reported for THE MEDICAL NEWS.)

(Continued from page 720.)

THURSDAY, JUNE 14TH.

DR. HUNT, of Clarksburg, reported a case of

IDIOPATHIC GLOSSITIS,

the only one he had met in twenty years' practice. The patient was a farmer, aged thirty-five years. The tongue swelled so as to fill the mouth and protrude from it. He was in this condition when Dr. Hunt first saw him. Free incisions were made into the tongue, with much relief. Next day there was again great distress and dyspnoea, and laryngotomy was resorted to, quite relieving the difficulty of breathing. He improved rapidly and the tube was removed. Three days after the laryngotomy his bedroom was scrubbed, and he returned to it while the floor was still wet. He soon began to suffer from dyspnoea, and he was almost moribund, six hours later, when Dr. Hunt saw him. The tube was reinserted, but it was too late; death took place immediately.

DR. C. M. SMITH, of Orangeville, read a paper on

THE TREATMENT OF COMPOUND FRACTURE OF THE LOWER THIRD OF HUMERUS—A NEW APPLICATION OF SAYRE'S SHORT-HIP-SPLINT.

He showed the modified splint and its application on a patient he presented, in whom there had been a severe compound fracture of the lower end of the humerus. The result was eminently satisfactory, though for a time it was doubtful if the arm could be saved.

DR. WILLIAM GARDNER, of Montreal, read a paper on

RUPTURED TUBAL FETATION CYSTS,

and related a case. The patient, aged twenty-nine, was married in July, 1887, and had an ordinary miscarriage in the following October. From this she recovered easily. Menses appeared normally on the 2d December. Patient remained well during the rest of the month, except for some of the signs of pregnancy slightly marked. Early in January a slight bloody discharge appeared, lasting two weeks. It was unlike menstrual blood. About the middle of January she was seized with intense pelvic pain and collapse, which lasted two days. During this period Dr. Browne, her medical attendant, feared that she would die, but she slowly rallied and made a partial recovery, but at the end of a fortnight later, early in February, there were alarming recurrences of pain and other symptoms. Dr. Gardner was then asked to see the patient, Dr. Browne stating that he believed the case to be one of extrauterine gestation. The patient was found to be suffering from severe pelvic and abdominal

pain, with great distention. The pain was not controlled by full doses of morphia; vomiting was frequent; the pulse weak and rapid. Vaginal examination revealed a free bloody discharge; fixation, softening and increase of bulk of the uterus, and to the right and behind it a firm, painful swelling. The use of electricity was precluded by the evident hemorrhage and peritonitis.

The abdominal cavity was opened, and a quantity of blood-clot of varying age and bloody serum removed. A ragged, friable, granular mass, an expansion of the right Fallopian tube, was torn away in attempting to raise it to the edge of the wound to apply the ligature. No ligature was applied. The abdomen and pelvic cavity were washed out and drained. When put to bed the condition of the patient was alarming, the pulse was 140 and very weak. She steadily rallied and made a complete though tedious recovery, the tediousness being due to cystitis. On examining the substance removed, a blood-stained fœtus about one inch in length was discovered, as well as ample evidence of chorionic villi. The fœtus had evidently been dead for some time, probably from the date of the first urgent symptoms, the state of things indicating clearly that electricity would have been of no use at any time after the patient had called in her doctor.

Dr. Gardner remarked on the difficulty of diagnosis, which probably, however, is not so great as often imagined, and not greater than in some cases of uterine pregnancy. Having made a diagnosis of extrauterine pregnancy—as the great majority of the cases are tubal—the question of treatment arises. Practically this may be considered under three heads. Foeticide by electricity, abdominal section to remove the foetation cyst and expectancy. There is much difference of opinion on the question of treatment at the present time.

Electricity.—The faradic current is to be selected. It is simple and easy to apply, and the apparatus almost always at hand. Its use is opposed *in toto* by some eminent abdominal surgeons, yet there is a mass of evidence in its favor so large that its position seems unassailable. The author has published a successful case (*Canada Med. and Surg. Journ.*, August, 1885), in which the evidences of correct diagnosis and cure were as complete as anything could be, short of seeing the fœtus or chorionic villi.

Mr. Lawson Tait, Dr. Imlach, Dr. Johnston, Dr. Janvrin and others say that as soon as the diagnosis is made we must open the abdomen. In support, they say that it is very rare that the diagnosis is made until pain and collapse supervene, which, they say, indicate rupture, and not merely contraction or distention of the tube, as believed by the advocates of electricity.

Unfortunately, and this is the strong point of the case for the advocates of immediate section, the first symptoms demanding medical aid may be those of the fatal rupture, and, as Dr. Herman says, if we judge of the fatality of extrauterine pregnancy by the results of abdominal section and post-mortems, we must regard it as being great; but there is no doubt that extrauterine foetation is far more common than is generally supposed, and that rupture with hemorrhage, and escape of the fœtus into the peritoneal cavity, often occurs, and is recovered from by absorption of both blood and fœtus. There are clinical facts in plenty to prove this. The fact, however, remains that whenever the diagnosis is made, and when the symptoms are serious, and whenever there are serious

symptoms of a doubtful character, this grand life-saving operation must be done to enable us to deal as best may be the case with the condition found.

The author's case goes to prove that even after there is every evidence of the death of the fœtus by electricity, symptoms may subsequently arise to render necessary abdominal section. It may be premised that the earlier the stage of pregnancy at which foeticide is effected, the less likely are after-symptoms to arise.

Expectancy.—Presuming the case to occur in thoroughly experienced and competent hands, the diagnosis to have been made, and the symptoms severe, an expectant treatment must be condemned. It will be proper only in doubtful cases with mild symptoms.

DR. SAMUEL CLARK, of Toronto, read a paper on

NEURASTHENIA.

He divided neurasthenics into three classes: 1st. Those who were physically in good health, but mentally unbalanced, although not insane. 2d. Those who were anæmic, and, consequently, weak in body. 3d. Those who were afflicted with such neurosis as lead to or evoke this disorder.

Dr. Clark strongly deprecated the use of narcotics, except in very extreme cases. Three hours of natural sleep had more recuperative power in them than could nine hours of drugged quietude. The principal medicines he used were such as the arsenites, phosphide of zinc, nux vomica, pyrophosphate of iron, cod-liver oil and the like.

(To be concluded.)

CORRESPONDENCE.

THE EXTERNAL USE OF SULPHUR IN SCIATICA.

To the Editor of THE MEDICAL NEWS,

SIR: In the May number of *The American Journal of the Medical Sciences*, page 109, I notice a recommendation, from the *Revue de Thérapeutique*, of the external use of sulphur as a remedy for sciatica, which is spoken of as an "extraordinary statement," etc., leaving the impression on the reader that you consider the external use of sulphur in sciatica as something original with Drs. Mussy and Duchesne.

The external use of sulphur in powder for sciatica is an old, popular English remedy. Fuller, in his well-known classic work on *Rheumatism, Rheumatic Gout and Sciatica*, third edition, page 472, says: "Nothing, however, proves more generally efficacious than sulphur, applied externally. Whatever its mode of operation, the fact remains that, employed in this manner, it often subdues pain which has persisted in spite of all other remedies. In many parts of England, the sulphur ointment of the Pharmacopœia is a favorite remedy amongst the poor for the cure of rheumatism, and I am indebted to one of my hospital patients for directing my attention to the subject. He was a man, forty-three years of age, who had been afflicted with sciatica in a severe form about five months. He had undergone a long course of medical treatment before he applied at the hospital, but without obtaining the least mitigation of suffering, when a friend induced him to put sulphur in his boots, and otherwise apply the remedy externally. In four days, he was much relieved, and, in less than a fortnight, had recovered

perfectly. Since that time, I have used it in seventeen chronic, non-inflammatory cases; and, in only six, did it fail in giving relief.

"The mode in which I usually employ it is to sprinkle thickly with precipitated sulphur a piece of new flannel, in which the whole of the affected limb is to be encased, from the foot upward. Whatever the precise influence it exerts in sciatica, there cannot be any doubt that its beneficial effects are most strikingly displayed in chronic cases, unattended by any symptoms of inflammation."

Fuller refers to Dr. Nicholson's special treatment with sulphur in the cure of rheumatism in 1820, and to an article by Mr. George Tucker, *Lancet*, March 7, 1835.

I feel like apologizing for troubling you with this unimportant historical matter, but for the fact that sciatica is so frequent, so obstinate; and so painful and distressing to the patient. I never fail to try sulphur in most cases of sciatica and chronic rheumatism which show an obstinacy in yielding to the more commonly used remedies, and I always send my patients with sciatica and chronic rheumatism first to sulphur springs, when sending them to any springs. It has been my custom while using sulphur externally, as advised by Fuller, to administer it freely internally, and, when there is anæmia, to combine it with iron; for instance, my usual formula is

R.—Sulphur. (præcip.),
 Ferri carb. aa ℥iv.
 Glycerini ℥iv.
 Aquæ gaultheriæ ad ℥iv.

A teaspoonful every two hours.

I also frequently use this formula in the treatment of the diseases which seem to have a rheumatic tendency, such as diphtheria, scarlet fever, chorea, etc.

W. F. McNUTT, M.D.

NEWS ITEMS.

The Clinical History of the Case of the Late German Emperor.—DR. MORELL MACKENZIE has published in the *British Medical Journal*, of June 23d, the following clinical history of the late Emperor Frederick's illness. The first definite symptoms of the illness, which, on June 15th, deprived Germany of a truly enlightened ruler and the world of a most noble-hearted man, appear to have shown themselves in January, 1887. There is said to be a somewhat remote history of cancer in the family, and for many years, the late emperor suffered from a certain delicacy of the throat. In 1886, he had an attack of measles, from which he recovered without any bad after-effects, but it was noticed that he never quite regained the high spirits for which he had before been remarkable. In the latter part of the same year, he suffered from a succession of obstinate "colds," which finally culminated in such extreme and persistent hoarseness that his physician in ordinary, Dr. von Wegner, called in Dr. Carl Gerhardt, Professor of Medicine in the University of Berlin, and a recognized authority on diseases of the throat. On laryngoscopic examination, a small growth was seen springing from the left vocal cord and interfering with its action. This was, in great part, destroyed by the electric cautery, and in the spring, the illustrious patient was sent to Ems, where it was hoped that the waters would complete the cure. The symptoms,

however, returned with greater severity, and the growth increased in size so rapidly that suspicion of its being malignant was excited.

Professor Ernst von Bergmann, the leading surgeon in Berlin, and, soon afterward, Professor Tobold, one of the pioneers in laryngology, were consulted, and it was agreed that an operation was desirable in order to determine the nature of the disease, and, if possible, extirpate it. With this view, it was proposed to perform thyrotomy in the first place, and, if necessary, to follow this up by such further surgical measures as the circumstances of the case might seem to call for. Before carrying this plan into execution, however, the medical attendants, being fully alive to the vast responsibility of their position, were anxious to have the advice of some laryngoscopic authority whose opinion would command general respect. It was unanimously decided to call in Sir (then Dr.) Morell Mackenzie, who accordingly proceeded to Berlin on May 20th. He found a sessile growth, about the size of a split pea, but oval in shape, situated on the posterior extremity and inner surface of the left vocal cord, the mobility of which was distinctly impaired. There was general congestion of the mucous membrane of the larynx. Dr. Mackenzie did not consider the clinical evidence as to the character of the affection decisive one way or the other, and suggested that, before any further steps were taken, a portion of the growth should be removed through the mouth and examined microscopically. He succeeded in thus extracting two or three fragments, which were at once submitted to Professor Rudolf Virchow. That eminent pathologist having failed to find any trace of malignant structure in them, it was unanimously agreed that Dr. Mackenzie should take the case into his own hands for a time, and should attempt to eradicate the disease, without external operation.

In June, the Emperor (then Crown Prince) came to England, and Dr. Mackenzie removed the remaining portion of the growth. After examination, this was, on July 1st, pronounced by Professor Virchow, to be a "hard, compressed warty growth that has started from a moderately irritated and thickened surface, and the examination of its base has not afforded the least support for the idea of a new formation penetrating inward." The voice was at this time so much improved that, on July 14th, the Prince, in visiting the Throat Hospital, made a little speech to the patients, in which he expressed a hope that they might be cured as quickly as he had been. The larynx, however, remained somewhat irritable, and the whole throat showed a tendency to become congested on very slight provocation.

At the beginning of August, there were signs of recurrence of the growth, and Dr. Mackenzie, on two occasions, applied the electric cautery with the result of destroying it entirely. The Prince then went to the Isle of Wight, the climate of which, however, proved too relaxing, and his throat gave him a good deal of trouble. Dr. Norris Wolfenden, who attended him while there, observed at the back of the larynx a slight thickening of the mucous membrane in the form of a ridge, extending horizontally from the base of one arytenoid cartilage to the other. The action of the vocal cord was still somewhat defective, as it had been in Berlin. The bracing air of Braemar was next tried, and considerable improvement took place in the local condition; the

thickening just mentioned was absorbed, the congestion of the larynx disappeared, and the affected cord moved more freely. Early in September, however, there was a relapse, and on the 18th of that month, while the Prince was at Toblach, in the Tyrol, Mr. Mark Hovell, who had succeeded Dr. Wolfenden, noticed a swelling half an inch below the left cord and parallel with its free border. This increased in size; oedema of the left aryteno-epiglottic fold supervened, and there was some constitutional disturbance. The acute symptoms passed off in a few days, and the Prince proceeded to Italy.

Toward the end of October, active hyperæmia of the whole interior of the larynx came on somewhat suddenly; the swelling under the left cord increased in size and began to ulcerate, and a reddish projection was noticed below the right cord. Early in November, the appearance was so ominous that it was thought expedient to have further advice, and Professor Leopold von Schrötter, of Vienna, Dr. Moritz Schmidt, of Frankfurt, and Dr. (now Professor) Hermann Krause were summoned to San Remo. After consultation, the diagnosis of cancer of the larynx was arrived at, and the propriety of a radical operation was discussed. The illustrious patient, having fully considered the question, decided not to submit himself to any procedure involving immediate risk to life, but to take his chance with treatment of a purely palliative kind. From this point onward, the disease made steady progress, with occasional exacerbations of the symptoms, owing to the intercurrent development of inflammatory processes in various parts of the larynx. These, in the early part of this year, became so pronounced as almost entirely to mask the essential disease, and hopes were entertained by some of the physicians that the affection might after all prove to be one of perichondritis depending on chronic laryngitis of exceptional severity.

About the end of January, the glottis began to be encroached on to a serious extent, and, on February 9th, tracheotomy became necessary. Professor von Bergmann was telegraphed for, but, before he could reach San Remo, the dyspnoea became so urgent that the operation was performed by Dr. Bramann in the presence of Sir Morell Mackenzie, Dr. Krause, Dr. Schrader and Mr. Hovell. The Prince did not rally from the effects of the operation for some time, and it became clear that the general health was beginning to give way. It was feared that secondary formations had developed in the lungs; but Professor Küssmaul, who was summoned, could find no evidence of such a complication. Soon afterward, however, Professor Waldeyer, to whom, in the absence of Professor Virchow, the microscopical examination of the expectorated matters had been entrusted, pronounced the laryngeal affection to be cancerous. The tracheotomy wound was for a few days in a very unhealthy state, and there was a good deal of suppuration. Great difficulty was experienced in finding a tube to fit comfortably in the wound, and finally Sir Morell Mackenzie was obliged to fashion one with his own hands. The illustrious patient thereupon recovered his appetite, and was able to sleep; and he regained his strength to such a degree that when his father, the Emperor William, died on March 9th, he insisted on returning at once to Germany, although the weather was most inclement.

At Charlottenburg, the new Emperor was able, for a time, to discharge many of the duties of his exalted

position, and he threw himself into the conduct of State affairs with such energy that his physicians were anxious to get him away from the neighborhood of Berlin. On April 13th, the tracheotomy tube became partially blocked by a mass projecting into its lower end, and some difficulty occurred in replacing it by a longer one. There was a good deal of hemorrhage, the blood finding its way into the lungs and setting up bronchitis. Diffuse suppurative inflammation of the loose tissue surrounding the trachea ensued, and for some days there was considerable pyrexia with occasional rigors. Apprehensions were felt that pyæmia was setting in, but the general condition improved on the establishment of a profuse purulent discharge which continued more or less till the end. In May, the inflammatory element in the case underwent a notable abatement, and there was a pause in the progress of the disease for two or three weeks. At this time, Professor Virchow again examined some of the discharge, without finding in it anything that, to his mind, was a proof of cancer.

On June 8th, it was obvious that a fresh complication had occurred; difficulty of swallowing came on, and it was thought that perforation into the œsophagus had taken place. On June 9th, Trendelenburg's tampon canula was substituted for the ordinary tracheotomy tube, with the view of preventing the food from escaping into the air-passages. The Emperor meanwhile was losing ground very fast, and, on the 13th, Sir Morell Mackenzie had to feed him with the œsophageal tube. On the evening of the 14th, pneumonia rapidly supervened, and death took place on the forenoon of the 15th.

The *post-mortem* examination, which was made on June 16th, by Professor Virchow and Dr. Langerhans, in the presence of Sir M. Mackenzie, Drs. von Wegner, von Bardeleben, von Bergmann, Waldeyer and Bramann, and Mr. Hovell, proved that the disease was cancer, complicated by suppurative inflammation of such intensity that the whole structure of the larynx was destroyed, its place being taken by a large abscess-cavity. Although a summary of the results of the *post-mortem* examination has already appeared in the daily newspapers, we regret that we are unable to give the full report, as orders were issued at the last moment that it should not be published.

Before the necropsy was made, Sir Morell Mackenzie, at the request of Prince Bismark, drew up the following report of the case, which he presented to the new Emperor, and which was deposited among the State archives:

"In my opinion, the disease from which the Emperor died was cancer. The morbid process probably commenced in the deepest tissues of the cartilaginous structures of the larynx, and they became affected at a very early date. A small growth, which was present when I first examined the late Emperor, was removed by me by several operations, and all the portions taken away were submitted to Professor Virchow. He was unable to detect in them any evidence of the existence of cancer. Examinations made, at the beginning of March, by Professor Waldeyer, however, led to the belief that cancer was then present. Whether the disease was originally cancerous or assumed a malignant character some months after its first appearance it is impossible to state. The fact that perichondritis and caries of the cartilages played an active and important part in the development

of the disease no doubt largely contributed to make it impossible to form a decided opinion as to its nature till quite a recent date."

"MORELL MACKENZIE."

The National Association of Railway Surgeons met in convention, in Chicago, last Thursday. An election of officers resulted as follows:

President.—John W. Jackson, M.D., of Kansas City.

First Vice-President.—Dr. Murphy, of St. Paul.

Second Vice-President.—J. B. Murdock, M.D., of Pittsburg.

Third Vice-President.—A. W. Reidnour, M.D., of Massillon, Ohio.

Fourth Vice-President.—B. L. Hover, M.D., of Rochester.

Secretary.—C. B. Stemen, M.D., of Fort Wayne.

Assistant Secretary.—J. H. Tressel, M.D., of Alliance, Ohio.

Corresponding Secretary.—E. R. Lewis, M.D.

Treasurer.—J. Harvey Reed, M.D., of Mansfield, Ohio.

In Memory of Prof. Bodley.—At a meeting of the Faculty of the Woman's Medical College, held June 20, 1888, the following action was taken on the death of Prof. Bodley.

Whereas, our honored Dean and Prof. of Chemistry, Rachel L. Bodley, has been suddenly removed by the hand of death from the arena of earthly activities, in so many of which she was deeply interested;

Resolved, that we, her colleagues in the Faculty of the Woman's Medical College, of Pennsylvania, recognize, in the removal of our senior member, the loss of one most familiar with the historical and traditional features of our College and its past work.

She was thoroughly acquainted with the arduous duties of Dean, which she performed most ably and acceptably, and in which her wise administration secured for the college friends whensoever her influence was exerted.

She was keenly alive to the personal as well as educational requirements of the students, so many of whom, coming as strangers from far distant lands, found in her a friend earnestly solicitous for all that concerned their welfare, and ever ready to do all in her power to further their interest.

She was an able teacher of chemistry, striving successfully by word and illustration to elucidate the intricate problems of her branch.

Religiously devout, she at once placed before those with whom she came in contact a high standard, socially and morally, and did much to establish the same for the college, to the service of which her efforts and indeed her lips were so unsparingly, unceasingly and ungrudgingly devoted.

Possessed of an acquaintance among people in all lands, through her college relations and affiliations, her usefulness to us and to the world can scarcely be overestimated, so varied and extensive had it become.

As a friend, she was genial, kindly, courteous ever, and we shall greatly miss her quiet dignity in our Faculty meetings. In the entire round of college work, with the extensive ramifications of which she was so thoroughly familiar, we feel her loss to be almost irreparable.

Resolved, That these resolutions be transcribed in full

upon our book of minutes, and a copy sent to her aged mother.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF OFFICERS SERVING IN THE MEDICAL DEPARTMENT, U. S. ARMY, FROM JUNE 26 TO JULY 2, 1888.

BAXTER, J. H., *Colonel and Chief Medical Purveyor*.—Will proceed to New York City on public business connected with the Medical Department, and on completion thereof will return to his station in Washington City.—S. O. 150, A. G. O., June 29, 1888.

OWEN, WILLIAM O., JR., *Captain and Assistant Surgeon*.—Ordered to Fort Leavenworth, Kansas, for duty.—S. O. 148, A. G. O., June 27, 1888.

WOODHULL, A. A., *Captain and Surgeon*.—Granted leave of absence for three months, to take effect about July 10, 1888.—S. O. 148, A. G. O., June 27, 1888.

So much of par. 3, S. O. 142, A. G. O., June 20, 1888, as relates to GEORGE H. TORNEY and GEORGE MCCREERY, *Captains and Assistant Surgeons*, is revoked.—S. O. 147, A. G. O., June 26, 1888.

WOOD, MARSHALL W., *Captain and Assistant Surgeon*.—Ordered to Fort Randall, Dakota Territory, for duty.—S. O. 147, A. G. O., June 26, 1888.

SHANNON, WILLIAM C., *Captain and Assistant Surgeon*.—Ordered to Fort Meade, Dakota Territory, for duty.—S. O. 147, A. G. O., June 26, 1888.

MCCREERY, GEORGE, *Captain and Assistant Surgeon*.—Ordered to Fort Warren, Mass., for duty.—S. O. 147, A. G. O., June 26, 1888.

JOHNSON, RICHARD W., *Captain and Assistant Surgeon*.—Designated as Medical Officer for a camp of instruction in rifle practice, to be established at Fisher's Island, N. Y. (near New London, Conn.), on July 2, 1888, and to continue during the months of July, August and September, and is ordered to proceed to Fisher's Island in proper season and report to the commanding officer for duty.—S. O. 131, *Division of the Atlantic* June 28, 1888.

GANDY CHARLES M., *First Lieutenant and Assistant Surgeon*.—Granted leave of absence for three months, to take effect on or after July 5, 1888.—S. O. 145, A. G. O., June 23, 1888.

CLENDENIN, PAUL, *First Lieutenant and Assistant Surgeon*.—Leave of absence granted in S. O. 59, Department of Texas, June 4, 1888, extended one month.—S. O. 149, A. G. O., June 28, 1888.

OFFICIAL LIST OF CHANGES IN THE STATIONS AND DUTIES OF THE MEDICAL CORPS OF THE U. S. NAVY, FOR THE WEEK ENDING JUNE 30, 1888.

Surgeon A. M. MOORE ordered to Naval Station New London.

AUSTIN, A. A., *Passed Assistant Surgeon*—Detached from "Gedney" and wait for orders.

OWENS, THOMAS, *Assistant Surgeon*.—Detached from Naval Station, New London, and ordered to Coast Survey Steamer "Gedney."

OFFICIAL LIST OF CHANGES OF STATIONS AND DUTIES OF MEDICAL OFFICERS OF THE U. S. MARINE-HOSPITAL SERVICE, FOR THE WEEK ENDING JUNE 30, 1888.

VANSANT, JOHN, *Surgeon*.—Granted leave of absence for ten days. June 25, 1888.

MEAD, F. W., *Passed Assistant Surgeon*.—Granted leave of absence for thirty days. June 28, 1888.

THE MEDICAL NEWS will be pleased to receive early intelligence of local events of general medical interest, or of matters which it is desirable to bring to the notice of the profession.

Local papers containing reports or news items should be marked.

Letters, whether written for publication or private information, must be authenticated by the names and addresses of their writers—of course not necessarily for publication.

All communications relating to the editorial department of the NEWS should be addressed to No. 1004 Walnut Street, Philadelphia.